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ABSTRACT

Material concerning standardization activities in the area of information processing at the Federal, National and International levels is provided in this publication. Also included are related policy and procedural guideline documents. A list of Federal Government participants involved in the development of Federal Information Processing Standards is provided. (Author)

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FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATION

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FIPS

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FEDERAL INFORMATION PROCESSING STANDARDS INDEX

U.S. DEPARTMENT OF COMMERCE
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Foreword

The Federal Information Processing Standards Publication Series of the National Bureau of Standards is the official publication relating to standards adopted and promulgated under the provisions of Public Law 89–306, and under Office of Management and Budget Circular A–86. The entire series constitutes the FEDERAL INFORMATION PROCESSING STANDARDS REGISTER.

This series is used to announce Federal Information Processing Standards, and to provide standards information of general interest and an index of relevant standards publications and specifications. Publications that announce adoption of standards provide the necessary policy, administrative, and guidance information for effective standards implementation and use. The technical specifications of the standard are usually attached to the publication, otherwise a source of copies is cited.

Comments covering Federal Information Processing Standards and Publications are welcomed, and should be addressed to the National Bureau of Standards, Center for Computer Sciences and Technology, Office of Information Processing Standards, Washington, D. C. 20234. Such comments will be either considered by NBS or forwarded to the responsible activity as appropriate.

LEWIS M. BRANSCOMB, *Director*

Abstract

This publication provides material concerning standardization activities in the area of information processing at the Federal, National and International levels. Also included are related policy and procedural guideline documents. A list of Federal Government participants involved in the development of Federal Information Processing Standards is provided.

Key words: American National Standards; computers, data elements and codes; data processing systems; Federal Information Processing Standards; management information systems; International Organization for Standardization; standards; U.S. Government.

Nat. Bur. Stand. (U.S.), Fed. Info. Process. Stand. Publ. (FIPS Pub) 12, 143 pages, (1970)

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Federal Information Processing Standards Publication 12

FEDERAL INFORMATION PROCESSING STANDARDS INDEX

January 1, 1971

Federal Information Processing Standards Publications are issued by the National Bureau of Standards under the direction of the Bureau of the Budget in accordance with the provisions of Public Law 89–306 and Bureau of the Budget Circular No. A–86.

ED048904

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1. Introduction

The National Bureau of Standards has the responsibility within the Federal Government for monitoring and coordinating the development of information processing standards as prescribed by P.L. 89–306 (The Brooks Bill), and publishing data standards that are approved in accordance with BOB Circular A–86 (Standardization of data elements and codes in data systems.) In the accomplishment of this responsibility, the National Bureau of Standards works closely with Federal departments and agencies, with the American National Standards Institute (ANSI) and with the International Organization for Standardization (ISO).

In order to facilitate communication and to better utilize the resources and expertise within the Federal Government now being expended in standardization efforts, the National Bureau of Standards is making available in a single document, information concerning standardization activities at all levels, related policy and procedural guideline documents, and the identification of federal participants in information processing standards committees at the federal, national, and international levels.

The first edition of this publication, FEDERAL INFORMATION PROCESSING STANDARDS INDEX, FIPS PUB 12, provides information which is readily available at this time. It is planned that this INDEX will be updated and expanded in the future and will be published on a yearly basis. Comments and recommendations for additional material to be included in future editions of the INDEX are welcome. Also changes in individual committee designations, in addresses or telephone numbers or other corrections should be forwarded to the Office of Information Processing Standards, Center for Computer Sciences and Technology, National Bureau of Standards, Washington, D. C. 20234.

In this INDEX, reference is made to the United States of America Standards Institute (USASI) and Bureau of the Budget (BOB). The names of these organizations have been changed recently to American National Standards Institute (ANSI) and Office of Management and Budget (OMB) respectively.

2. Federal Information Processing Standards (FIPS) Publications

2.1. List of Publications in the Federal Information Processing Standards Publication Series

The Federal Information Processing Standards Publications (FIPS PUB) series is the official publication medium within the Federal Government for information relating to standards which are adopted and promulgated under the provisions of (1) Public Law 89–306, "The Brooks Bill", an act to provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment in Federal departments and agencies, and (2) Bureau of the Budget Circular A–86 entitled "Standardization of data elements and codes in data systems". The publications in this series collectively constitute the Federal Information Processing Standards Register. The standards in the series are classified into four major categories—hardware, software, applications, and data.

In most cases the technical specifications of the standards are affixed to the FIPS PUBS. Where this is not the case, sources where these are available are cited. Procedures for obtaining FIPS PUBS are contained in Appendix A.

2.1.1. General Publications

FIPS PUB 0

GENERAL DESCRIPTION OF FEDERAL INFORMATION PROCESSING STANDARDS REGISTER, November 1, 1968, 8pp., 20 cents.
SD Catalog Number C13.52:0
CFSTI Accession Number PB 191 994

This document defines the responsibilities for the Register, defines its contents and categories of standards, and suggests a method for establishing and maintaining standards within an activity.

FIPS PUB 12

FEDERAL INFORMATION PROCESSING STANDARDS INDEX, January 1, 1971, 147pp., $1.50
SD Catalog Number C13.52.12

This FIPS PUB provides information concerning standardization activity at the Federal, National, and International levels, related policy and procedural guideline documents, and the identification of Federal participants on information processing standards committees. Information is provided concerning standards development projects and availability of published documents.

2.1.2. Hardware Standards (Codes and Media)

FIPS PUB 1

CODE FOR INFORMATION INTERCHANGE, November 1, 1968, 4pp., 10 cents. (Supplemented by FIPS PUB 7.)
SD Catalog Number C13.52:1
CFSTI Accession Number PB 191 995

This document provides administrative, policy, and guidance information relative to the implementation and utilization of the standard code for information interchange.

The technical specifications of this standard are available to Federal Government agencies from the General Services Administration Specifications Activity at a cost of 40 cents a copy. Refer to FIPS 1. Others may obtain copies from the American National Standards Institute for $3.25 a copy. Refer to AN Standard X3. 4–1968. The technical specifications define a code and character set for use in Federal information processing systems, communications systems and associated equipments.

FIPS PUB 2

PERFORATED TAPE CODE FOR INFORMATION INTERCHANGE, November 1, 1968, 4pp., 10 cents. (Supplemented by FIPS PUB 7.)
SD Catalog Number C13.52:2
CFSTI Accession Number PB 191 996

This document provides administrative, policy, and guidance information pertaining to the implementation and utilization of the standard perforated tape code for information interchange.

The technical specifications of this standard are available to Federal Government agencies from the GSA Specifications Activity at 45 cents a copy. Refer to FIPS 2. Others may obtain copies from the American National Standards Institute for $2.25 a copy. Refer to the AN Standard X3.6–1965. The technical specifications of the standard specify the representation of the Federal Standard Code for Information Interchange (FIPS 1) on perforated tape used in Federal information processing systems, communications systems, and associated equipments.

FIPS PUB 3

RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE (800 CPI, NRZI), November 1, 1968, 4pp., 10 cents. (Supplemented by FIPS PUB 7.)
SD Catalog Number C13.52:3
CFSTI Accession Number PB 191 997

This FIPS PUB provides administrative, policy, and guidance information relative to the implementation and utilization of the standard recorded magnetic tape (800 characters per inch, NRZI "non-return-to-zero—change on one" method of recording) for information interchange.

The technical specifications of this standard are available to Federal Government agencies from the GSA Specifications Activity at 70 cents a copy. Refer to FIPS 3. Others may get copies from the American National Standards Institute for $3.25 a copy. Refer to AN Standard X3.22–1967. The technical specifications of the standard provide a format and recording standard for ½-inch, 9-track magnetic tape and reels used in Federal information processing systems and associated equipments. It is one of a series of standards implementing the Federal Standard Code for Information Interchange (FIPS 1) in magnetic tape media.

FIPS PUB 7

IMPLEMENTATION OF THE CODE FOR INFORMATION INTERCHANGE AND RELATED MEDIA STANDARDS (Supplement to FIPS PUBS 1, 2, and 3), March 7, 1969, 16pp., 25 cents.
SD Catalog Number C13.52:7
CFSTI Accession Number PB 191 999

This FIPS PUB provides further details covering the implementation of the Code for Information Interchange (FIPS 1), Perforated Tape Code for Information Interchange (FIPS 2), and Recorded Magnetic Tape Code for Information Interchange (800 CPI, NRZI) (FIPS 3). The publication includes a letter of approval of these standards by the President of the United States and a letter with attachments by the Secretary of Commerce providing details and policy of their implementation.

2.1.3. Software Standards (Documentation)

FIPS PUB 11

VOCABULARY FOR INFORMATION PROCESSING, November 15, 1970, 4pp., 15 cents.
SD Catalog Number C13.52:11

This FIPS PUB provides administrative, policy, and guidance information pertaining to the utilization of the American National Standard VOCABULARY FOR INFORMATION PROCESSING (X3.12–1970) within the Federal Government.

Copies of the VOCABULARY (including the FIPS PUB) are available to Federal Government agencies from the GSA Specifications Activity at $1.00 a copy. Refer to FIPS PUB 11, VOCABULARY FOR INFORMATION PROCESSING. Others may obtain copies of the VOCABULARY from the American National Standards Institute for $6.00 a copy. Refer to ANSI Standard X3.12–1970.

The VOCABULARY provides an alphabetic listing of approximately 1200 entries, each consisting of a term and its definition, for use in information processing activities such as the description, representation, communication, interpretation, and processing of data by human or automatic means.

2.1.4. Data Standards (Representations and Codes)

FIPS PUB 4

CALENDAR DATE, November 1, 1968, 4pp., 20 cents. (Federal General Data Standard)
SD Catalog Number C13.52:4
CFSTI Accession Number PB 191 998

This publication announces the adoption of a Federal standard for representing calendar dates used in the interchange of formatted machine sensible data. The technical specifications (FIPS 4) are affixed to the FIPS PUB.

FIPS PUB 5–1

STATES AND OUTLYING AREAS OF THE UNITED STATES, June 15, 1970 (Supersedes FIPS PUB 5) 4 pp., 20 cents. (Federal General Data Standard)
SD Catalog Number C13.52:5–1
CFSTI Accession Number PB 194 344

This publication provides names, abbreviations, and codes for representing the 50 States, the District of Columbia, and the outlying areas, all of which are considered to be "first order subdivisions" of the United States. These codes are for use in the interchange of formatted machine sensible data. The technical specifications of the standard (FIPS 5–1) are affixed to the FIPS PUB.

Hollerith punched cards containing names, abbreviations and codes prescribed by specifications of this standard are available from the NBS Clearinghouse for Federal Scientific and Technical Information.* When ordering, refer to accession number PB 190 719. Cost is $3.00. (Cards are interpreted.)

FIPS PUB 6–1

COUNTIES AND COUNTY EQUIVALENTS OF THE STATES OF THE UNITED STATES, June 15, 1970 (Supersedes FIPS PUB 6). 34 pp., 45 cents. (Federal General Data Standard)
SD Catalog Number C13.52:6–1
CFSTI Accession Number PB 193 399

This publication provides names and codes for representing the Counties of the 50 States or county equivalents thereof for use in the interchange of formatted machine sensible data. Also included in the set of codes are the independent cities of Maryland, Missouri, Nevada, and Virginia and the Census Divisions and boroughs of Alaska. The technical specifications of the standard (FIPS 6–1) are affixed to the FIPS PUB.

Magnetic tapes and Hollerith punched cards which contain state abbreviations, state codes, county names, and county codes as contained in the specification of the standard are available from the NBS Clearinghouse for Scientific and Technical Information.

Magnetic tapes are available in the following forms:
- Seven track, BCD code, 556 cpi, even parity
- Seven track, BCD code, 556 cpi, odd parity
- Seven track, BCD code, 800 cpi, even parity
- Seven track, BCD code, 800 cpi, odd parity
- Nine track, ASCII (FIPS 1) code, 800 cpi, odd parity
- Nine track, EBCDIC code, 800 cpi, odd parity

When ordering magnetic tape, refer to accession number PB 190 604, and specify tape characteristics needed. Cost is $25.00 which includes a 600 foot tape and reel.

When ordering punched cards, refer to accession number PB 190 605. Cost is $32.00. (Cards are interpreted.)

FIPS PUB 8

METROPOLITAN STATISTICAL AREAS, June 9, 1969, 8pp., 20 cents. (Federal General Data Standard)
SD Catalog Number C13.52:8
CFSTI Accession Number PB 192 000

This FIPS PUB announces standard identifiers and codes for representing the Standard Metropolitan Statistical Areas (commonly referred to as "S-M-S-A's") for use in the interchange of machine sensible data. The general concept of a S-M-S-A is one of an integrated economic and social unit with a recognized large population nucleus. S-M-S-A's were defined and developed to meet the need for the presentation of general-purpose statistics by agencies of the Federal Government. The technical specifications of the standard (FIPS 8) are affixed to the FIPS PUB.

Another document which should be used in conjunction with FIPS PUB 8 is Bureau of the Budget publication, "Standard Metropolitan Statistical Areas 1967", which provides definitions for the composition and structure of each S-M-S-A. This publication is available from the Superintendent of Documents at a price of 30 cents a copy. (SD Catalog number PREX 2.2:M56/967.)

FIPS PUB 9

CONGRESSIONAL DISTRICTS OF THE UNITED STATES, November 14, 1969, 4pp., 10 cents. (Federal General Data Standard)
SD Catalog Number C13.52:9
CFSTI Accession Number PB 192 001

This publication provides a standard coding pattern for representing the Congressional Districts identified in the various Congresses of the United States for use in the interchange of machine sensible data. In this concept, Congressional District are considered to be any of the districts into which a state is divided for the purpose of electing representatives to the House of Representatives. The technical specifications of the standard (FIPS 9) are affixed to the FIPS PUB.

Another publication used in conjunction with this standard is the "Congressional District Atlas" which provides definitions and outline maps of Congressional Districts. It is useful

* Effective September 2, 1970, the Clearinghouse for Federal Scientific and Technical Information was transferred from the National Bureau of Standards to the National Technical Information Service, U.S. Department of Commerce.

in those instances where the exact boundaries of Districts must be defined, but need not be referenced if the only interest is that of the code pattern. The "Congressional District Atlas", a Department of Commerce, Bureau of Census publication, is available from the Superintendent of Documents at a price of $1.75 a copy. (SD Catalog Number C3.62/5:968.)

FIPS PUB 10

COUNTRIES, DEPENDENCIES AND AREAS OF SPECIAL SOVEREIGNTY, June 15, 1970, 23 pp., 30 cents. (Federal General Data Standard)
SD Catalog Number C13.52:10
CFSTI Accession Number PB 194 345

This publication provides a list of basic geographical-political entities and associated standard codes. These entities include independent states, dependent areas, areas of quasi-independence, noncontiguous territories, possessions without population, areas with special sovereignty associations, areas without sovereignty, political regimes not recognized by the United States, and outlying areas of the United States. This standard code is for use in the interchange of formatted machine sensible data.

Hollerith punched cards which contain codes as prescribed by the specifications of the standard are available from the NBS Clearinghouse for Federal Scientific and Technical Information. When ordering punched cards, refer to accession number PB 190 720. Cost is $3.00. (Cards are interpreted.)

2.2. Index to Articles Appearing in the FIPS NOTES Column of the NBS TECHNICAL NEWS BULLETIN (December 1969 through June 1970) [1]

American National Standards Institute Approves New Standards ..... December 1969
Automatic Typesetting ..... April 1969
Center Hosts ISO Subcommittee .... September 1969
COBOL To Be A Federal Standard .. March 1969
CODASYL COBOL— JOURNAL OF DEVELOPMENT 1968 ..... December 1969
Code for Information Interchange, Implementation of ..... April 1969
Code Transition Committee ..... March 1969
Congressional Districts of the United States ..... December 1969
Disk Pack Reference Standard ..... May 1969
Federal Information Processing Standards, Status of ..... June 1970
Federal Information Processing Standards Recommendations, Status of ..... August 1969
Federal Information Processing Standards Register ..... March 1969
FIPS Coordinating And Advisory Committee ..... August 1969
FIPS Task Groups, New ..... December 1969
GAO Review Guide ..... April 1969
Human Factor in Data Codes ..... March 1970
Identification of Individuals for Information Processing, Proposed Standard for ..... June 1970
Industry Reference Disc Received ... March 1970
Interagency Task Groups Planned ... March 1969
International Standards for Information Processing ..... February 1970
JOVIAL Programming Language ... March 1969
OCR Typewriter Ribbon Study ..... March 1969
Proposed Federal Information Processing Standards, Solicitation for Comments on ..... January 1970
Magnetic Disk Committee Invites Membership ..... March 1969
Metropolitan Statistical Areas, Standard Code for ..... August 1969
Reference Tape Standard, New .... May 1969
Selection and Procurement of Computer Systems by the Federal Government ..... January 1970
USA Standards Institute Changes Name ..... December 1969
USASI Committees, Notes On ..... April 1969
Voluntary Standards Activities ..... June 1970
Writing Dates and Numbering Weeks, ISO Recommendations For ..... March 1970
X3 Committee Reorganized ..... September 1969
X3 Standards, Current and New .... April 1969

[1] The Technical News Bulletin, prepared by the NBS Office of Technical Information and Publications, Washington, D.C. 20234, is published on a monthly basis to keep science and industry informed regarding the technical programs, accomplishments, and activities of NBS. It is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Annual subscription: Domestic, $3; Foreign, $4; single copy, 30 cents.

The FIPS NOTES Column is published regularly as a part of the NBS Technical News Bulletin and provides information relating to information-processing standards activities within the Federal Government, particularly those of the NBS Center for Computer Sciences and Technology. Reprints of Articles appearing in the FIPS NOTES are available upon request from the NBS Office of Information Processing Standards, Center for Computer Sciences and Technology, Washington, D.C. 20234.

2.3. Index of Proposed Federal Information Processing Standards Published in the FEDERAL REGISTER [1]

Title of Proposed Standard	Federal Register Date	Federal Register Page Number
Bit Sequencing of the Code for Information Interchange in Serial-By-Bit Data Transmission	January 30, 1970	1246
Character Structure and Character Parity Sense For Parallel-By-Bit Data Communication in the Code for Information Interchange	January 30, 1970	1248
Character Structure and Character Parity Sense for Serial-By-Bit Data Communication in the Code for Information Interchange	January 30, 1970	1249
General Purpose Paper Cards for Information Processing	November 11, 1969	18131
Hollerith Punched Card Code	November 11, 1969	18135
Interface Between Data Terminal Equipment and Automatic Calling Equipment for Data Communication	April 16, 1970	6207
Interface Between Data Terminal Equipment and Data Communication Equipment Employing Serial Binary Data Interchange	April 16, 1970	6200
Layout of Forms for OCR Input	March 20, 1970	4888
Rectangular Holes in 12-Row Punched Cards	November 11, 1969	18134
Subsets of the Code for Information Processing	December 19, 1969	19916

[1] The FEDERAL REGISTER is utilized by the National Bureau of Standards as the publication medium for coordinating proposed Federal Standards developed under provisions of the Brooks Bill (Public Law 89-306) with private industry, the public, and State and local governments.

The FEDERAL REGISTER is published daily, Tuesday through Saturday, by the National Archives and Records Service of the General Services Administration and is furnished by mail on a subscription basis for $25 per year, payable in advance. Remittance in the form of check or money order should be made payable to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Also, the FEDERAL REGISTER is generally available for reference from major libraries.

3. Cross Index of International, National, and Federal Standards for Information Processing [1]

ISO Recommendation or Draft Recommendation		Related National Standard	Related Federal Standard (FIPS)
CHARACTER RECOGNITION			
R1004	Print Specifications for Magnetic Ink Character Recognition.	X3.2–1970 Same Title	
R1073	Alphanumeric Character Sets for Optical Character Recognition.	X3.17–1966 Character Set for Optical Character Recognition	
DR1831	Printing Specifications for Optical Character Recognition.	Being Developed within X3.1 as revision to X3.17–1966	
CHARACTER SETS AND CODES			
R646	6 and 7-bit Coded Character Sets for Information Processing Interchange.	X3.4–1968 Code for Information Interchange	FIPS PUB 1. Code for Information Interchange
R963	Guide for the Definition of 4-bit Character Sets derived from the ISO 7-bit Coded Character Set for Information Processing Interchange.		
DATA COMMUNICATIONS			
DR1732	The Use of Longitudinal Parity to Detect Errors in Information Messages.		
DR1733	Assignment of Connector Pin Numbers for Interchange Circuits Between Data Terminal Equipment and Data Communication Equipment Where CCITT Recommendation V 24 Applies.		
DR1734	Character Structure for Start/Stop and Synchronous Transmission.	X3.16–1966 Character Structure and Character Parity Sense for Serial-by-Bit Data Communication in the USA Standard Code for Information Interchange X3.25–1968 Character Structure and Character Parity Sense for Parallel-by-Bit Data Communication in the USACII	
DR1745	Basic Mode Control Procedures for Data Communications Systems.	X3.3.4/212 Data Communication Control Procedure for Information Interchange (Proposed Standard) X3.1–1962 Signaling Speeds for Data Transmission X3.15–1966 Bit Sequencing of the USA Standard Code for Information Interchange in Serial-by-Bit Data Transmission	

[1] See footnote at end of this table.

ISO Recommendation or Draft Recommendation		Related National Standard	Related Federal Standard (FIPS)
		X3.24–1968 Signal Quality at Interface Between Data Processing Terminal Equipment and Synchronous Data Communication Equipment for Serial Data Transmission	
DATA REPRESENTATIONS AND CODES			
			FIPS PUB 4. Calendar Date FIPS PUB 5–1 States and Outlying Areas of the States of the United States FIPS PUB 6–1 Counties and County Equivalents of the States of the United States FIPS PUB 8. Metropolitan Statistical Areas FIPS PUB 9. Congressional Districts of the United States FIPS PUB 10. Countries, Dependencies, and Areas of Special Sovereignty
DOCUMENTATION			
R1028	Flowchart Symbols for Information Processing.	X3.5–1968 Flowchart Symbols and Their useage in Information Processing X3.12–1966 Vocabulary for Information Processing	
MEDIA, LABELS			
R1001	Magnetic Tape Labelling and File Structure for Information Interchange.	X3.27–1969 Magnetic Tape Labels for Information Interchange	
MEDIA, MAGNETIC TAPE			
R961	Implementation of the 6 and 7-bit Coded Character Sets on 7-track 12.7 mm (½ in) Magnetic Tape.		
R962	Implementation of the 7-bit Coded Character Set on 9-track 12.7 mm (½ in) Magnetic Tape.		
DR1858	General Purpose Hubs and Reels for Magnetic Tape used in Interchange Instrumentation Applications.	RS–346 Type A Hubs and Reels for Magnetic Tape	
DR1859	Unrecorded Magnetic Tape (General Dimensional Requirements) for Instrumentation Applications.		

ISO Recommendation or Draft Recommendation		Related National Standard	Related Federal Standard (FIPS)
DR1860	Precision Reels for Magnetic Tape used in Interchange Instrumentation Applications.		
DR1861	7-track 200 RPI (8 RPmm) Magnetic Tape for Data Interchange.		
DR1862	9-track 200 RPI (8 RPmm) Magnetic Tape for Data Interchange.	X3.14–1969 Recorded Magnetic Tape for Information Interchange (200 CPI, NRZI)	
DR1863	9-track 800 RPI (32 RPmm) Magnetic Tape for Data Interchange.	X3.22–1967 Recorded Magnetic Tape for Information Interchange (800 CPI, NRZI)	FIBS PUB 3. Recorded Magnetic Tape for Information Interchange (800 CPI, NRZI)
DR1864	Unrecorded Magnetic Tape for Data Interchange, 200–800 RPI (8–32 RPmm), NRZI, and 1600 RPI (63 RPmm), Phase-encoded.	X3.2.1/402 Unrecorded Tape for Information Interchange (Being Balloted upon in X3.2.1)	
MEDIA, PERFORATED TAPE			
R1113	Representation of 6 and 7-Bit Coded Character Sets on Punched Tape.	X3.6–1965 Perforated Tape Code for Information Interchange	FIPS PUB 2. Perforated Tape Code for Information Interchange
DR1671	Dimensions for Punched Paper Tape for Data Interchange.	X3.18–1967 1-inch Perforated Paper Tape for Information Interchange	
		X3.19–1967 Eleven-Sixteenths inch Perforated Paper Tape	
DR1729	Properties of Unpunched Paper Tape.	X3.2/842 Specifications for Properties of Unpunched Paper Perforator Tape (Being Balloted upon in X3)	
		X3.20–1967 Take-Up Reels for One-Inch Perforated Tape for Information Interchange	
MEDIA, PUNCHED CARDS			
DR1679	Representation of ISO 7-Bit Coded Character Set on 12-row Punched Cards.	X3.26–1969 Hollerith Punched Card Code	
DR1681	Specifications for Unpunched Paper Cards.	X3.11–1969 Specifications for General Purpose Paper Cards For Information Interchange	
DR1682	Dimensions and Location of Rectangular Punched Holes in 80 columns Punched Paper Cards.	X3.21–1967 Rectangular Holes in 12-Row Punched Cards	
DR2021	Representation of ISO 8-Bit Coded Character Set on 12-Row Punched Cards.		

ISO Recommendation or Draft Recommendation		Related National Standard	Related Federal Standard (FIPS)
NUMERICAL CONTROL			
R840	Code for the Numerical Control of Machines. (compatible with the ISO 7-Bit Code).	RS–358 Subset of USA Standard Code For Information Interchange for Numerical Machine Control Perforated Tape	
R841	Axis and Motion Nomenclature for Numerically Controlled Machines.	RS–267–A Same Title	
R1056	Punched Tape Block Formats for the Numerical Control of Machines—Coding of Preparatory Functions G and Miscellaneous Functions M.		
R1057	Interchangeable Punched Tape Variable Block Format for Positioning and Straight-Cut Numerically Controlled Machines.	RS–273–A Same Title Except "Perforated" for "Punched"	
R1058	Punched Tape Variable Block Format for Positioning and Straight-Cut Numerically Controlled Machines.		
R1059	Punched Tape Fixed Block Format for Positioning and Straight-Cut Numerically Controlled Machines.	RS–326–A Interchangeable Perforated Tape Fixed Block Format for Positioning and Straight-Cut Numerically Controlled Machines	
PROGRAMMING LANGUAGES			
DR1538	Programming Language ALGOL.		
DR1539	Programming Language FORTRAN.	X3.9–1966 FORTRAN X3.10–1966 Basic FORTRAN	
DR1672	Hardware Representation of ALGOL Basic Symbols in the ISO 6 and 7-Bit Coded Character Sets.		
DR1989	COBOL	X3.23–1969 COBOL	

[1] Approved American National Standards and ISO Recommendations are available from the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018. Catalog available upon request.

Procedures for obtaining Federal Information Processing Standards (FIPS) are contained in Appendix A of this INDEX.

4. Federal Policy and Procedural Guideline Documents

4.1. Public Law 89–306 (Brooks Bill), dated October 30, 1965

Public Law 89–306
89th Congress, H. R. 4845
October 30, 1965

An Act

79 STAT. 1127

To provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data processing equipment by Federal departments and agencies.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That title I of the Federal Property and Administrative Services Act of 1949 (63 Stat. 377), as amended, is hereby amended by adding a new section to read as follows:

"AUTOMATIC DATA PROCESSING EQUIPMENT

"SEC. 111. (a) The Administrator is authorized and directed to coordinate and provide for the economic and efficient purchase, lease, and maintenance of automatic data processing equipment by Federal agencies.

"(b) (1) Automatic data processing equipment suitable for efficient and effective use by Federal agencies shall be provided by the Administrator through purchase, lease, transfer of equipment from other Federal agencies, or otherwise, and the Administrator is authorized and directed to provide by contract or otherwise for the maintenance and repair of such equipment. In carrying out his responsibilities under this section the Administrator is authorized to transfer automatic data processing equipment between Federal agencies, to provide for joint utilization of such equipment by two or more Federal agencies, and to establish and operate equipment pools and data processing centers for the use of two or more such agencies when necessary for its most efficient and effective utilization.

"(2) The Administrator may delegate to one or more Federal agencies authority to operate automatic data processing equipment pools and automatic data processing centers, and to lease, purchase, or maintain individual automatic data processing systems or specific units of equipment, including such equipment used in automatic data processing pools and automatic data processing centers, when such action is determined by the Administrator to be necessary for the economy and efficiency of operations, or when such action is essential to national defense or national security. The Administrator may delegate to one or more Federal agencies authority to lease, purchase, or maintain automatic data processing equipment to the extent to which he determines such action to be necessary and desirable to allow for the orderly implementation of a program for the utilization of such equipment.

"(c) There is hereby authorized to be established on the books of the Treasury an automatic data processing fund, which shall be available without fiscal year limitation for expenses, including personal services, other costs, and the procurement by lease, purchase, transfer, or otherwise of equipment, maintenance, and repair of such equipment by contract or otherwise, necessary for the efficient coordination, operation, utilization of such equipment by and for Federal agencies: Provided, That a report of equipment inventory, utilization, and acquisitions, together with an account of receipts, disbursements, and transfers to miscellaneous receipts, under this authorization shall be made annually in connection with the budget estimates to the Director of the Bureau of the Budget and to the Congress, and the inclusion in appropriation acts of provisions regulating the operation of the automatic data processing fund, or limiting the expenditures therefrom, is hereby authorized.

"(d) There are authorized to be appropriated to said fund such sums as may be required which, together with the value, as determined by the Administrator of supplies and equipment from time to time transferred to the Administrator, shall constitute the capital of the fund: Provided, That said fund shall be credited with (1) advances and reimbursements from available appropriations and funds of any agency (including the General Services Administration), organization, or contractor utilizing such

equipment and services rendered them, at rates determined by the Administrator to approximate the costs thereof met by the fund (including depreciation of equipment, provision for accrued leave, and for amortization of installation costs, but excluding, in the determination of rates prior to the fiscal year 1967, such direct operating expenses as may be directly appropriated for, which expenses may be charged to the fund and covered by advances or reimbursements from such direct appropriations) and (2) refunds or recoveries resulting from operations of the fund, including the net proceeds of disposal of excess or surplus personal property and receipts from carriers and others for loss of or damage to property: Provided further, That following the close of each fiscal year any net income, after making provisions for prior year losses, if any, shall be transferred to the Treasury of the United States as miscellaneous receipts.

"(e) The proviso following paragraph (4) in section 201 (a) of this Act and the provisions of section 602 (d) of this Act shall have no application in the administration of this section. No other provision of this Act or any other Act which is inconsistent with the provisions of this section shall be applicable in the administration of this section.

"(f) The Secretary of Commerce is authorized (1) to provide agencies, and the Administrator of General Services in the exercise of the authority delegated in this section, with scientific and technological advisory services relating to automatic data processing and related systems, and (2) to make appropriate recommendations to the President relating to the establishment of uniform Federal automatic data processing standards. The Secretary of Commerce is authorized to undertake the necessary research in the sciences and technologies of automatic data processing computer and related systems, as may be required under provisions of this subsection.

"(g) The authority conferred upon the Administrator and the Secretary of Commerce by the section shall be exercised subject to direction by the President and to fiscal and policy control exercised by the Bureau of the Budget. Authority so conferred upon the Administrator shall not be so construed as to impair or interfere with the determination by agencies of their individual automatic data processing equipment requirements, including configurations of equipment needed. The Administrator shall not interfere with, or attempt to control in any way, the use made of automatic data processing equipment of components thereof by any agency. The Administrator shall provide adequate notice to all agencies and other users concerned with respect to each proposed determination specifically affecting them or the automatic data processing equipment or components used by them. In the absence of mutual agreement between the Administrator and the agency or user concerned, such proposed determinations shall be subject to review and decision by the Bureau of the Budget unless the President otherwise directs."

Approved October 30, 1965.

4.2. Policy Guidance to the Department of Commerce (National Bureau of Standards) in the Implementation of P.L. 89–306, BOB Letter dated December 15, 1966

EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET
WASHINGTON, D.C. 20503

December 15, 1966

Honorable John T. Connor
Secretary of Commerce
Washington, D.C. 20230

Dear Jack:

Under the terms of Public Law 89–306 (the Brooks bill) the authority vested in the Secretary of Commerce is made subject to "direction by the President and to fiscal and policy control by the Bureau of the Budget" (Section 111(g)). Accordingly, our respective staffs have collaborated in the development of a policy guidance paper for the Department of Commerce (National Bureau of Standards) efforts under the legislation.

The policy guidance paper, which has been agreed to at the staff levels, is enclosed. It has my approval.

It is widely recognized that major hindrances to improving the use of ADP are the absence of: (a) standardization in character sets, input-output media, and interfaces which provide for compatible interchange of information and interoperation of systems and equipment, (b) standardization of computer programming languages, and (c) yardsticks for evaluating software and its effect upon he performance of the computer system. The Department should concentrate on actions which will overcome these deficiencies.

We recognize that as the computer technology evolves and as user interests and needs change, the problems related to effective ADP management will accordingly change. It is therefore necessary that this policy guidance document be subject to continuing review.

The complexities and interrelationships among these problems also require that all actions taken by the Department of Commerce, General Services Administration, and the Bureau of the Budget be closely coordinated and also include full consideration of the viewpoints of the using agencies. The Federal ADP Advisory Council and the Interagency Committee on ADP will serve as principal means for obtaining the views of the using agencies. We are confident that these cooperative efforts will result in an effective action program to achieve improved ADP management.

Sincerely,

Phillip S. Hughes
Acting Director

Enclosure

Policy Guidance to the Department of Commerce (National Bureau of Standards) In the Implementation of P.L. 89–306

Basic Policy

The provisions of P.L. 89–306 will be administered in a manner that is consistent with the prime objective of encouraging the use of ADP by Government agencies to achieve greater productivity and reduced costs in the discharge of their respective agency program responsibilities.

P.L. 89–306 provides that the Secretary of Commerce is authorized (1) to provide agencies, and the Administrator of General Services in the exercise of the authority delegated, with scientific and technological advisory services relating to automatic data processing and related systems, and (2) to make appropriate recommendations to the President relating to the establishment of uniform Federal automatic data processing standards. The Secretary of Commerce is authorized to undertake the necessary research in the sciences and technologies of automatic data processing computers and related systems as may be required.

Responsibility for carrying out these functions for the Secretary has been assigned to the Center for Computer Sciences and Technology, an organization within the Institute for Applied Technology, National Bureau of Standards.

In carrying out its responsibilities, the Center should maximize the utilization of exist-

ing capabilities and facilities even when they reside in agencies not specifically identified in P.L. 89–306.

The interrelationships among the central management agencies identified in P.L. 89–306 and the using agencies, coupled with the dynamic nature of the ADP technology, require that a special effort be made to expedite policy development and implementation. Therefore, direct working relationships will be maintained among the Center, the ADP Management Branch of the Bureau of the Budget, and the Office of Automated Data Management Services of the General Services Administration. Among the means to be employed for extensive coordination with the using agencies are the Federal ADP Advisory Council and the Interagency Committee on ADP.

Initial Guidelines

Initial guidelines for specific actions to be taken in certain areas are:

A. Advisory and Consulting Services

The Center will provide scientific and technological advisory and consulting services to executive agencies on automatic data processing. Upon request of Federal agencies, the Center will, to the extent possible, provide direct assistance on specific projects and monitor the technical performance of commercial consulting contracts. In addition, the Center will:

1. Provide guidelines for use by agencies in conducting systems studies, including consideration of systems interrelationships.

2. Provide guidelines and methods for monitoring the performance of systems studies and for implementing the results of such studies.

3. Provide criteria to assist in evaluating software and hardware developments that may be considered during the systems studies.

4. Provide technical guidelines for preparing solicitations of proposals, including the specification of system requirements.

5. Provide guidelines, criteria and techniques for evaluating and selecting equipment and related software, giving priority emphasis to criteria for measuring the effectiveness and efficiency of software. Data on this subject will also be furnished to GSA for consideration in the procurement of computers.

6. Maintain a reference index of computer programs to minimize the need for the development of programs already developed, tested and in use elsewhere.

7. Provide guidelines for evaluating installation and systems performance on a continuing basis.

The Center will keep abreast of the state-of-the-art developments in ADP equipment, techniques and languages and will evaluate these developments in terms of their current or potential impact upon the Government's use of equipment and software and its ADP management policies. Findings in this regard will be made known promptly to the Bureau of the Budget.

It is essential for NBS staff who are consulting with agencies in system design to be fully aware of on-going system developments, whether performed in-house or under contract for other Government agencies. In this connection, a study should be made and reported to the Bureau of the Budget soon after January 1, 1967 to explore the feasibility of developing a system by which each Federal agency would keep the NBS informed of all ADP system design study projects. In addition to the possibility of NBS maintaining a current index of projects in progress, consideration should be given to requiring agencies to provide to NBS, for a central reference file, copies of the reports of such information systems studies.

B. Development of Voluntary Commercial Standards

The Center will provide day-to-day guidance and monitorship of an executive branch program to promote the development and testing of voluntary commercial standards for automatic data processing equipment, techniques and computer languages. This responsibility currently excludes standards for data elements and codes.

In this role, the Center will:

1. Participate in activities of the X3 Committee on Information Processing of the United States of America Standards Institute, its subcommittees and task forces, and in activities of the International Standards Organization as requested by the USASI.

2. Arrange and insure appropriate representation and active participation from other Federal agencies on the X3 Committee, subcommittees and task forces to complement the Center's participation with additional expertise from the operating environments of the Government, and

3. Monitor and coordinate all such participation by all Federal agencies to assure its consistency with the Federal Government's objectives.

Prior to casting an official ballot on proposals under consideration by the X3 Committee, the Center will consider the views of interested Federal agencies, assuring that the probable impact of the subject standard is properly explored and understood.

In its research and development activities, the Center will make available to the various X3 groups its findings and conclusions for use in their deliberations. Care will be exercised to insure that all Government representatives participating in such X3 deliberations are kept currently informed of related standardization activities so that they may reflect so far as practicable known Government requirements.

C. Recommendations for Uniform Federal Standards

The Center will undertake to increase compatibility in automatic data processing in the Federal Government by recommending Federal standards related to automatic data processing equipment, techniques and computer languages. This responsibility currently excludes standards for data elements and codes, but the Center will provide technical advice and assistance upon request to groups developing recommendations for such standards.

In fulfilling this role, the Center will:

1. Immediately begin to develop, issue and maintain a statement of the Federal Government's standardization objectives and needs. The statement is intended to guide the orderly and logical pursuit of standardization in ways that are compatible with identified Federal interests.

2. Survey and keep abreast of ADP standardization activities within the Federal Government, the USASI, and elsewhere, and initiate and promote activities as necessary to achieve the Government's objectives.

3. Study and provide recommendations for Federal ADP standards.

4. Study and provide recommendations on the use within the Federal Government of each appropriate United States Standard approved by the United States of America Standards Institute in the area of ADP equipment, computer languages and techniques (excluding data elements and codes).

5. To the extent feasible and desirable, develop and recommend means for measuring compliance with Federal standards.

6. Provide for technical maintenance of Federal ADP standards.

7. Recommend procedures to be used in the Federal Government for adopting Federal standards and developing and implementing plans therefor.

Recommendations for Federal standards will be transmitted through the Secretary of Commerce to the Bureau of the Budget. Such communications will include (1) a statement of purposes to be served by the standard, (2) an assessment of its probable economic and technological impacts, (3) a summary of agency and industry comments that were considered in the formulation of the recommendation, (4) a reference to applicable methods for measuring compliance with the standards, (5) areas for recommended application, and (6) planning guidance for development of implementation schedules in each agency.

In the development of Federal standards, the Center will communicate and work closely with all Federal agencies (and with manufacturers, private industry, and State and local governments when required and advantageous) to assure proper consideration of their needs and views and to obtain their cooperation in the development process.

D. Research on Computer Sciences and Techniques

The Center will sponsor, monitor and undertake research and development activities in the computer and information sciences and technologies, including system design, oriented primarily toward Government application.

The Center will maintain current awareness of on-going basic and applied research and development activities conducted by other agencies, by Federally-sponsored contractors and grantees, and by the private sector of the economy. The Center will also develop means for making such activities known and the results, including appropriate evaluations, available to Federal agencies for their benefit. In carrying out the necessary research and development as required in support of statutory responsibilities for provid-

ing scientific and technical advisory services to other agencies and for developing Federal automatic data processing standards and preferred conventions of common practice, the Center will obviously refrain from duplicating or interfering with the research of user agencies. However, the Center will collaborate in the research and development programs of other agencies as appropriate, upon request.

Research activities of the Center will be directed primarily toward areas that give promise of satisfying widespread needs within the Federal Government and that offer prospects for significant improvements over existing capabilities. In particular, research and development activities will be sponsored or undertaken by the Center, as appropriate, for the following purposes:

1. To supplement agency research efforts when necessary to meet Government-wide requirements or to provide solutions to problems of concern to several different agencies.

2. To initiate efforts to solve large-scale and difficult problems sufficiently unique to special needs of Government that outside interests are not likely to undertake vigorous and timely action.

3. To evaluate and apply advanced concepts to the development, organization and implementation of automatic data processing, computer and related systems, including the innovation or extension of techniques needed for improved cost effectiveness in the conduct of agency programs through the use of computers and related techniques.

4. To conduct exploratory research in order to provide the technological bases for future standardization activities and to maintain the competence of the technical staff engaged in technical advisory services, testing and evaluation, and standardization activities.

5. To identify continuing research and development requirements for use by the Center, other agencies, academic and other organizations and industry in planning and coordinating R and D programs in the area of the computer and information sciences and technology.

An annual review of the accomplishments of and programs for research in computer sciences and techniques should be conducted with the Bureau of the Budget, Office of Science and Technology, and other Government agencies engaged in or sponsoring research in computer sciences to assess accomplishments and to provide guidance for programs.

E. Computer Services

The Center will operate a computer service activity to meet the needs of the National Bureau of Standards and upon request to furnish services including problem diagnosis, systems design, programming and related support activities to Federal agencies on a reimbursable basis.

4.3 Policy Guidance to the General Services Administration in the Implementation of P.L. 89-306, BOB Letter dated May 4, 1966

EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET
WASHINGTON, D.C. 20503

May 4, 1966

Honorable Lawson B. Knott, Jr.
Administrator, General Services
Administration
Washington, D.C. 20405

Dear Lawson:

Your letter of February 1, 1966, requested an early meeting to discuss the implementation of PL 89-306 and enclosed a background paper to be used in such discussions. Subsequent telephone conversations between you and Mr. Harold Seidman satisfied the immediate need for that meeting and it was agreed that our respective staffs should continue their joint efforts to develop a policy guidance paper that would set the direction of GSA's efforts under the legislation.

The completed policy guidance paper, which has been agreed to at the staff levels, is enclosed. It has my approval. The paper establishes the basic premise that major changes will be based upon a careful evaluation of alternative courses of action. That evaluation will explicitly weigh the benefits obtained from each alternative (including cost reduction and avoidance) against the costs incurred. Further, implementation of approved actions should take maximum advantage of existing capabilities in lieu of creating new capabilities. We regard the relationship between equipment hardware and software as a major obstacle to improving the effective use of automatic data processing equipment in the Federal Government and therefore request that priority attention be given to this matter.

We recognize that as the computer technology, sales practices, pricing structures, and user interests change, the problem related to effective ADP management also change. It is therefore necessary that this policy guidance document remain under constant review by our staffs so that necessary adjustments to the programs are made as required.

The complexities and interrelationships among these problems also require that all actions taken by the General Services Administration, National Bureau of Standards and the Bureau of the Budget be closely coordinated and include full consideration of the viewpoints of the using agencies. The Federal ADP Council sponsored by the Bureau of the Budget will serve as a principal means for obtaining these views. We are confident that these cooperative relationships will result in an effective action program to achieve improved ADP management.

Sincerely,

Charles L. Schultze
Director

Enclosure

Policy Guidance to the General Services Administration in the Implementation of P.L. 89–306

Basic policy

The provisions of P.L. 89–306 will be administered in a manner that is consistent with the prime objective of encouraging the use of ADP by Government agencies to achieve greater productivity and reduced costs in the discharge of their program responsibilities.

P.L. 89–306 provides for three major changes in the existing ADP program. First, to improve the Government's bargaining position it provides, through GSA, for advancement of the central-purchaser concept in acquiring ADP equipment and related services. Second, it provides for ADP service centers to promote joint use, now limited to the sharing-exchange program. Third, it provides, through a revolving fund, a financial mechanism for conducting the program, including procurement and joint-use arrangements.

The implementation of these changes will be preceded by a careful study of alternative courses of action, and an evaluation of the potential impact which the selected action might have upon the prime objective stated above. These actions will recognize the specific responsibilities placed upon the using agencies by P.L. 89–306 for the determination of their ADP equipment requirements. Further, the Report on Management of Automatic Data Processing in the Federal Government, approved by the President on March 2, 1965, provided a definitive blueprint for appropriate action in management and technological matters. This blueprint will remain under constant review and be updated to give effect to changing circumstances.

Existing capabilities should be used to the maximum in accomplishing approved actions, even though such facilities may exist in agencies not specifically identified in P.L. 89–306. For example, since the ADP inventory data for the Department of Defense represents about two-thirds of the total Government volume, consideration should be given to the possibility of using DOD's processing facilities to satisfy the information requirements of the General Services Administration, Bureau of the Budget, and other agencies. Likewise the equipment selection office at Hanscom Air Force Base might be used for the selection of equipment for other agencies as it is now doing for a Commerce (Weather Bureau) computer. Procedures and reimbursement arrangements would be mutually agreed upon.

The interrelationships among using agencies and the central management agencies identified in P.L. 89–306, coupled with the dynamic nature of the ADP technology, require that a special effort be made to expedite policy development, modification, coordination and implementation. To provide a mechanism for this effort we plan to use the "Federal ADP Council." The Council will be used for consideration of certain proposed actions prior to implementation.

Initial Guidelines

Initial guidelines for specific actions to be taken in certain areas are set forth herein.

A. ADP Revolving Fund

The ADP revolving fund authorized by P.L. 89–306 shall be used to promote and facilitate the financing of arrangements for the joint use of ADP equipment and related services.

GSA will, however, explore various possibilities for enabling agencies to obtain needed data processing equipment and/or services at a reduced cost, which may lead to further uses of the fund. Among the possibilities to be studied are:

1. The establishment, operation, or monitoring the operation of ADP Service Centers in metropolitan areas or in areas where a concentration of ADP requirements exists.
2. The provision of central Government-wide system services in functional activities which are common to many or all Government agencies, such as legal retrieval systems.
3. The provision of equipment support services on a centralized or regional basis, such as maintenance, tape testing, cleaning and restoration; punch card and tape acquisition.
4. The establishment of central multiple-access computer facilities (or utilities), building upon the research and evaluation findings of the National Bureau of Standards, Department of Defense, and other agencies on the effectiveness of such systems.
5. The financing of procurements from the fund to take advantage of price reductions which have time limitations inconsistent with normal funding cycles.

The studies will include a discussion of the management and economic advantages and disadvantages expected to result from adoption of the recommendations. Studies will identify all related supporting costs.

B. Review of the ADP Procurement Process

1. GSA will evaluate the procurement processes currently employed by the Federal Government in acquiring data processing equipment or services, to determine the areas in which revised techniques, methods or practices will offer greater efficiency and economy in acquiring the end product. This evaluation will cover, among other things:

a. A determination of the appropriateness of continuing the annual negotiation of schedules for lease, purchase and maintenance of equipment and services.
b. A more precise definition of the software which the contractor agrees to supply and more specific penalty provisions for failure to deliver the promised software.
c. The possibility of procuring ADP equipment and ADP software as separate and distinct items, not necessarily from the same suppliers.
d. The possibility that additional sources of procurement should be cultivated to serve as competitive alternatives to procuring equipment or services directly from the supplier.
e. The advantages and possibilities of consolidated or other purchase arrangements for equipment to be selected by the agencies.

2. GSA will undertake a program to assist individual Federal agencies in negotiating the procurement of equipment and systems support, assuring that:
a. The Government profits in each succeeding acquisition from the experience of prior procurements and strives to acquire the data processing equipment and accompanying software, training, etc., at the minimum cost.
b. The agency determines its ADP equipment requirements, including development of systems specifications.
c. The agency determines the final selection of equipment.
d. A basis is established and maintained for containing relationships between agency and supplier after equipment is acquired.
e. Equipment available or expected to become available for redistribution is considered by agencies prior to instituting action to select new equipment.

3. In collaboration with the scientific and technological research and evaluation capabilities of NBS, GSA will develop procurement techniques which would focus upon "total systems performance" in lieu of product capability.

C. Redistribution of Excess Equipment

1. Although excess ADP equipment will be used to the maximum extent in meeting legitimate approved agency needs, computers should not be used by agencies for work that is not essential to the agency mission. The Bureau of the Budget will require that the same criteria are used in acquiring "excess" equipment that apply to new equipment.

2. GSA will extend and intensify its program to effect the redistribution of excess equipment within the Government (including its cost-type contractors) whenever practicable. In particular, GSA will (a) review existing processes for obtaining and circularizing information regarding equipment availability and institute improvments as necessary, (b) seek and evaluate reasons why equipments are unclaimed by agencies, as a basis for improving the effectiveness of the redistribution program, (c) initiate and cultivate working contracts with agencies to assist them in arranging for the use of suitable excess equipment in lieu of acquiring additional equipment whenever economically feasible, and (d) initiate steps to assist agencies in achieving economics by substituting excess owned equipment for similar equipment being rented or leased.

3. GSA will maintain a continuous review of potential excesses in various categories of Government-owned equipment, and will inform agencies when such excesses are sufficiently imminent (a) to be considered in determining the need for soliciting industry or (b) to warrant only the temporary rental of additional equipment (in lieu of purchase) until the excess equipment is available for redistribution.

D. Source Data Automation.

GSA, through the National Archives and Records Service, will continue its program for developing and encouraging the use of source data automation techniques by Government agencies.

E. Information Systems

Work has been in progress within the Bureau of the Budget to develop an information system which will meet the requirements of central agencies, agency or sub-agency management and the operating activities. The central agencies and the principal using agencies will participate in an evaluation and critique of the initial draft of this system (preferably through the Federal ADP Council) and the development of the framework of the final system. Thereafter, GSA will provide full time staff members to assist in the detailed design of the system, and such personnel as may be required to program, operate and maintain the system.

As an interim measure BOB Circular A–55 is being revised to provide, among other things, a December 31, 1965 inventory. From this interim action it will be possible to determine agency plans for acquisition of additional computers during the remainder of FY 66 and 67.

4.4. Memorandum for Heads of Departments and Agencies, Presidential Letter dated June 28, 1966

THE WHITE HOUSE
WASHINGTON

June 28, 1966

MEMORANDUM FOR

HEADS OF DEPARTMENTS AND AGENCIES

I want the head of every Federal agency to explore and apply all possible means to
—use the electronic computer to do a better job.
—manage computer activity at the lowest possible cost.

I want my administration to give priority emphasis to both of these objectives—nothing less will suffice.

The electronic computer is having a greater impact on what the Government does and how it does it than any other product of modern technology.

The computer is making it possible to
—send men and satellites into space
—make significant strides in medical research
—add several billions of dollars to our revenue through improved tax administration
—administer the huge and complex social security and medicare programs
—manage a multi-billion dollar defense logistics system
—speed the issuance of G.I. insurance dividends, at much less cost
—save lives through better search and rescue operations
—harness atomic energy for peaceful uses
—design better but less costly highways and structures.

In short, computers are enabling us to achieve progress and benefits which a decade ago were beyond our grasp.

The technology is available. Its potential for good has been amply demonstrated, but it remains to be tapped in fuller measure.

I am determined that we take advantage of this technology by using it imaginatively to accomplish worthwhile purposes.

I therefore want every agency head to give thorough study to new ways in which the electronic computer might be used to
—provide better service to the public
—improve agency performance
—reduce costs.

But, as we use computers to achieve those benefits, I want these activities managed at the lowest possible cost.

At the present time, the Federal Government
—uses 2,600 computers
—employs 71,000 people in this activity
—spends over $2 billion annually to acquire and operate this equipment, including special military type computers.

Clearly, we must devote our best efforts to managing this large investment wisely and with the least cost.

I approved a blueprint for action when I approved the Bureau of the Budget "Report on Management of ADP in the Government."

The Congress recognized this need when it enacted Public Law 89–306 (the Brooks Bill) last October. This legislation provided specific authorities to

—the General Services Administration, for the procurement, utilization and disposition of automati. data processing equipment

—the Department of Commerce, for the development of data processing standards and the provision of assistance to agencies in designing computer-based systems

—the Bureau of the Budget, for exercising policy and fiscal control over the implementation of these authorities.

These agencies are seeking actively to put into effect ways for improving and reducing the cost of this huge and complex operation.

In my Budget Message for 1967 I told the Congress of my intent to make sure that this huge investment is managed efficiently.

The Federal Government must give priority attention to

—establishing better and more effective procurement methods

—making fuller use of existing facilities through sharing and joint-use arrangements before acquiring additional equipment

—re-utilizing excess equipment whenever feasible

—achieving, with industry cooperation, greater compatibility of equipment.

I expect all agencies to cooperate fully with the Bureau of the Budget, the General Services Administration, and the Department of Commerce in accomplishing these objectives.

I want the Director of the Bureau of the Budget to report to me on December 31, 1966, and every six months thereafter, on the progress that is being made throughout the Federal Government in improving the management of this very important technology.

Lyndon B. Johnson

4.5 BOB Circular A–54, Policies on selection and acquisition of automatic data processing (ADP) equipment (October 14, 1961) and subsequent transmittal memoranda

EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET
WASHINGTON, D.C. 20503

October 14, 1961

CIRCULAR NO. A–54

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Policies on selection and acquisition of automatic data processing (ADP) equipment

1. **Purpose.** This Circular prescribes policies on (a) making selections of equipment to be acquired for use in the automatic data processing (ADP) program of the executive branch, and (b) making determinations as to whether the ADP equipment to be acquired will be leased, purchased, or leased with an option to purchase.

2. **Scope.** The ADP equipment affected by the policies stated herein includes:

a. Electronic digital computers, irrespective of use, size, capacity, or price;

b. All peripheral or auxiliary equipment used in support of electronic computers, whether or not cable-connected and whether selected and acquired with the computer or separately;

c. Punched-card equipment, whether used in conjunction with or independent of an electronic computer; and

d. Data transmission or communications equipment that is selected and acquired solely or primarily for use with a configuration of ADP equipment which includes an electronic computer.

Analog computers are covered only when computers of this type are being used as equipment peripheral to a digital computer.

Items of ADP equipment that are (a) physically incorporated in a weapon, or (b) manufactured for the Government under a developmental contract, are not affected by the policies stated herein.

3. **Applicability.** The policies herein apply to ADP equipment acquired by the Government and to that ADP equipment which is acquired and operated by Government contractors solely to process Government data at Government expense (e.g., Government-owned, contractor-operated facilities). These policies do not apply to ADP equipment acquired by universities and similar institutions with financial assistance through grants-in-aid of Government funds.

The policy provisions of this Circular become applicable when a determination has been made that the utilization of ADP equipment is essential. It is assumed that such determinations have been preceded by and are based upon the results of well-documented studies which provide an adequate factual basis for concluding (a) that the functions or processes for which the ADP equipment can be used are essential to perform, and (b) that the systems, procedures, and methods to be employed in performing these functions or processes have been designed to achieve the highest practicable degree of effectiveness with optimum efficiency and operational economy. Guidelines for planning and conducting studies preceding a decision to utilize ADP equipment, for the development of system specifications, and for equipment evaluation and selection are contained in Bureau of the Budget Bulletin No. 60–6, "Automatic Data Processing (ADP) Program of the Executive Branch: Studies preceding the acquisition of ADP equipment," dated March 18, 1960.

4. **Policies on equipment selection.** The selection of ADP equipment includes the initial selection of ADP equipment, the selection of ADP equipment additional to that on hand, the selection of ADP equipment to replace ADP equipment on hand, the modification of equipment on hand, usually for the purpose of increasing memory capacity, computational capability, or speed of input or output, or combinations of the foregoing. In all these circumstances, the following policies apply:

a. The selection of ADP equipment will not be made until system specifications are available to serve as a basis for selection. For purposes of this Circular, the term "system specifications" means (1) the delineation of the objectives which the system is intended to accomplish; (2) the data processing requirements underlying that accomplishment, i.e., a description of the data output and its intended uses, the data input, data files, volumes of data, processing frequencies and timing; and (3) such ADP equipment capabilities as may need to be identified. System specifications will be designed to insure free competition among equipment manufacturers.

b. The officials responsible for making decisions on the selection of ADP equipment will assure that the selection process accords equal opportunity and appropriate consideration to all manufacturers who offer equipment capable of meeting the system specifications. In this connection, the selection process may be facilitated by written invitations to manufacturers to submit proposals as a means for obtaining information regarding the capabilities of ADP equipment to meet the system specifications.

c. Two prime factors will be considered in the selection of equipment: (1) its capability to fulfill the system specifications, and (2) its overall costs, in terms of acquisition, preparation for use, and operation. The term overall costs, as used in this paragraph, will be interpreted to include such cost elements as personnel, purchase price or rentals, maintenance of purchased equipment, site preparation and installation, programming and training. When ADP equipment of two or more manufacturers meets the system specifications, the equipment which represents the least overall cost to the Government will be selected. Factors which do not relate directly or indirectly to the capability of ADP equipment to meet system specifications or overall costs normally will not be included in the considerations unless a conclusive judgment cannot be made on the basis of the two prime factors.

5. **Policies on equipment acquisition.** Most commercially available ADP equipment can be acquired by purchase or by lease, with or without an option to purchase. The General Services Administration has contracts with principal manufacturers, listed in Federal Supply Schedules (FSS), for the rental of ADP equipment. GSA currently is negotiating contracts for the purchase (including provisions for trade-in allowances) and maintenance of ADP equipment. Until such time as these contracts appear on the Federal Supply Schedule, it will be necessary for departments and agencies to negotiate purchase and maintenance transactions. All ADP equipment acquisition transactions are subject to prevailing policies, laws and regulations governing procurement by Federal Government agencies. In addition, except for equipment that can be acquired by the purchase method only, the following policies are applicable:

a. The method of acquiring ADP equipment will be determined after careful consideration of the relative merits of all methods available (i.e., purchase, lease, or lease-with-option-to-purchase. The method chosen will be that which offers the greatest advantage to the Government under the circumstances which pertain to each situation. In this connection, the following general guidelines will be taken into account:

(1) The purchase method is preferred when all of the following conditions exist:

a. The system study which preceded the selection of the equipment has established a reasonable expectancy that the ADP equipment under consideration can be successfully and advantageously used.

b. A comparative cost analysis of the alternative methods of acquisition, of the types illustrated by Attachments A and B, indicates that a cost advantage can be obtained by the purchase method in six years or less after the date of delivery. This analysis usually will include the following cost elements under each method: for the lease method—rental costs, including maintenance; for the purchase method—purchase costs, including purchase price, maintenance, and other one-time costs applicable only to purchase; for the lease-with-option-to-purchase method—rental costs, and purchase costs less credits applicable upon purchase. In addition to the cost elements described above, the residual value of equipment to the Federal Government will be considered as a factor in a comparative cost analysis. Trade-in allowances quoted by manufacturers may be used as a representation of the residual value.

c. The capabilities of the ADP equipment will continue to be needed and will be sufficient to satisfy the system requirements, current and projected, for a period beyond the point in time at which the purchase method begins to provide a cost advantage. The possibility that future technological advances will render the selected equipment comparatively obsolete before the cost advantage point is reached should not rule out purchase if the selected equipment is expected to be able to satisfy the system requirements.

(2) The lease-with-option-to-purchase method is indicated when it is necessary or advantageous to proceed with the acquisition of the equipment that meets system specifications, but it is desirable to defer temporarily a decision on purchase because circumstances do not fully satisfy the conditions which would indicate purchase. This situation might arise when it is determined that a short period of operational experience is desirable to prove the validity of a system design on which there is no previous experience, or where decisions which might substantially alter the system specifications are imminent.

(3) The lease method, without option to purchase, is indicated only when it is necessary or advantageous to proceed with the acquisition of equipment that meets system specifications and it has been established conclusively that any one of the conditions under which purchase is indicated is not attainable.

b. Negotiations or renegotiations of equipment delivery dates will be conducted in a manner which insures that firm and final commitments by the Government to accept delivery of ADP equipment on a specific date will not be made until it has been determined through a readiness review that the using agency will be prepared to use the equipment productively as soon as it becomes operational.

6. **Review of current or pending lease transactions.**

a. Lease or lease-with-purchase-option transactions in effect at the time this Circular is issued, and which are expected to remain in effect until fiscal year 1964, will be reviewed in the light of the provisions of paragraph 5. If it is found to be to the advantage of the Government to purchase leased ADP equipment in this category, steps will be taken to make such purchases during the earliest fiscal year in which funds for this purpose are available to the agency. Reviews of current lease transactions should be undertaken as soon as practicable and completed by June 30, 1962.

b. The method of acquisition of ADP equipment selected but not yet accepted for delivery at the time this Circular is issued will be reviewed for adherence to the policies herein stated, and, when indicated, the basis of acquisition will be changed to conform if permitted by the terms of the contract or agreement.

7. **Documentation.** System studies (sometimes referred to as applications studies, feasibility studies, and by other terms), system specifications, and readiness reviews will be fully documented. Decisions on the selection of ADP equipment, on the method of acquisition, and on the review of the current status of the method of acquisition also will be documented to reflect adequately the considerations taken into account and the basis for the decisions.

8. **Administration of policies.** The head of each executive department and establishment will establish the necessary framework of procedures, including appropriate reviews and controls, that will assure compliance with the policies herein stated.

By direction of the President:

DAVID E. BELL
Director

4.5.1. BOB Circular A–54, Transmittal Memorandum No. 1, dated June 27, 1967

EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET
WASHINGTON, D.C. 20503

June 27, 1967

CIRCULAR NO. A–54
Revised
Transmittal Memorandum No. 1

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Policies on selection and acquisition of automatic data processing equipment

1. **Purpose.** This Transmittal Memorandum No. 1 provides interim modifications to Circular No. A–54 pending the issuance of a revised Circular.

2. **Modifications.**

a. **Paragraph 3, Applicability.** Change paragraph 3 to read as follows:

"a. The policies herein apply to agencies of the Federal Government and to Government contractors (including educational institutions and other not-for-profit organizations) who operate ADP equipment in the performance of work under cost-reimbursement-type contracts or subcontracts when (1) the equipment is leased and the total cost of leasing is to be reimbursed under one or more cost-reimbursement-type contracts, (2) the equipment is purchased by the contractor for the account of the Government or title will pass to the Government, (3) the equipment is furnished to the contractor by the Government, or (4) the equipment is installed in Government-owned, contractor-operated facilities.

"b. The policy provisions of this Circular become applicable when a determination has been made that the utilization of ADP equipment is essential. It is assumed that such determinations have been preceded by and are based upon the results of well-documented studies which provide adequate factual basis for concluding (1) that the functions or processes for which the ADP equipment can be used are essential to perform, and (2) that the systems, procedures, and methods to be employed in performing these functions or processes have been designed to achieve the highest practicable degree of effectiveness with optimum efficiency and operational economy. Guidelines for planning and conducting studies preceding a decision to utilize ADP equipment, for the development of system specifications, and for equipment evaluation and selection were contained in Bureau of the Budget Bulletin No. 60–6, Automatic Data Processing (ADP) Program of the Executive Branch: Studies preceding the acquisition of ADP equipment, dated March 18, 1960.

"c. A decision to initiate the process of selecting and acquiring ADP equipment, or acquiring ADP services which supplement the capacity of installed equipment, from commercial sources will not be made unless it is first determined that the required ADP capability cannot be met satisfactorily either by sharing ADP equipment already installed or by utilizing excess leased or Government-owned ADP equipment, as provided by Federal Property Management Regulations. The reasons for any such determinations will be adequately documented."

b. **Paragraph 5, Policies on equipment acquisition.** Make the following changes in paragraph 5:

(1) Change the introduction to read as follows:

"Most commercially available ADP equipment can be acquired by purchase or lease from equipment manufacturers, or by lease from commercial leasing firms. Lease arrangements can usually include a purchase option. The General Services Administration currently has Federal Supply Schedule contracts with equipment manufacturers for the purchase, lease and maintenance of ADP equipment. Lease arrangements under these contracts all contain a purchase option. The Contractor's Authorized Price Lists issued pursuant to these Schedules contain the terms, conditions and prices which are applicable to all purchase orders issued by Federal agencies under the Schedules. However, it will usually be necessary for Federal agencies to define these terms and conditions with more precision in the purchase orders in order to assure that any specific requirements are covered. In particular, agencies will assure that the terms and conditions for each procurement are clear with respect to the required delivery dates of both hardware and software to provide an operational system, and the attainment of total performance at a rate and cost consistent with that upon which the selection of equipment was predicated. Similar assurances should also be sought in authorized procurement actions which do not make use of Federal Supply Schedule contracts. The General Services Administration will assist agencies in negotiating requirements with equipment manufacturers, commercial leasing firms and other suppliers. The determination of whether ADP equipment should be purchased or leased will be governed by the following policies:"

(2) Add the following sentences to the end of paragraph 5 a(1)(b):

"Also considered as a factor in the comparative cost analysis will be the cost of money (i.e., interest) which will be added to the capital invested in the purchase of the equipment. Interest will not be applied to lease and maintenance costs. In making the computation for the interest cost in each year, it will be assumed that the capital investment will be reduced at the end of each year on a straight-line basis over the estimated period of equipment use. The interest rate used will be the current average market yield, rounded to the nearest one-eighth of one percent, on outstanding Treasury marketable obligations with approximately 5 years remaining to maturity at the time the purchase/lease decision is made; this is obtainable from the Office of the Fiscal Assistant Secretary of the Treasury Department (184–5458). The factors discussed herein will be included in the comparative cost analysis as additions to the items illustrated on Attachments A and B. Other economic analysis techniques are permissible if they are consistent with agency policies and practices regarding purchase/lease decisions in general."

(3) Add the following as a new paragraph 5 c:

"c. Any equipment displaced by new acquisitions, or because it is no longer required for the purposes for which it was being used, will be made available for redistribution as excess property in accordance with Federal Property Management Regulations and will not be retained for other uses unless fully justified in accordance with agency approval procedures. Such justification will be carefully developed and evaluated, taking into account the program and cost benefits to be derived by the new uses of the equipment, the cost of operating and maintaining the displaced equipment and, alternatively, the cost of acquiring and operating other equipment in lieu of the displaced equipment to serve the same purposes."

Charles L. Schultze
Director

4.5.2 BOB Circular A–54, Transmittal Memorandum No. 2, dated January 7, 1969

EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET
WASHINGTON, D.C. 20503

January 7, 1969

CIRCULAR NO. A–54
Revised
Transmittal Memorandum No. 2

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Policies on selection and acquisition of automatic data processing (ADP) equipment

1. **Purpose.** This Transmittal Memorandum amends Circular No. A–54 pending the issuance of a revised Circular.

2. **Amendments.**

a. Under 5a(1), a new paragraph is added:

"(d) The feasibility and economics of performing maintenance of equipment with in-house resources has been considered. This consideration should be consistent with the provisions of Bureau of the Budget Circular A–76, Revised, dated August 30, 1967, "Policies for acquiring commercial or industrial products and services for Government use." In each case, the variable elements of cost to have the services performed under contract (costs for on-site and on-call maintenance service required) should be weighted against the variable elements of cost to perform the maintenance in-house (personnel cost, spare parts and test equipment, establishment of and continuation of a program for training, and other indirect costs). Costs such as providing working space for the maintenance personnel and a storeroom for spare parts, are generally comparable under either type maintenance arrangement and consequently, for comparison purposes, can be excluded. Some of the additional factors that should be considered before making an in-house maintenance decision are the (1) operational character of systems, (2) location of equipment, (3) split maintenance responsibility, (4) quality of maintenance and modification by equipment manufacturers, (5) size of computer installation, and (6) experience requirements and training for maintenance personnel. The General Services Administration has under way a detailed study of the alternative methods of acquiring maintenance, the cost considerations and other factors involved and will later issue more specific guidelines to assist agencies in arriving at maintenance decisions."

4.6. BOB Circular A–71, Responsibilities for the Administration and Management of Automatic Data Processing Activities (March 6, 1965)

EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET
WASHINGTON, D.C. 20503

March 6, 1965

CIRCULAR NO. A–71

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Responsibilities for the Administration and Management of Automatic Data Processing Activities

1. **Purpose.** This Circular identifies certain responsibilities of executive agencies for the administration and management of automatic data processing (ADP) activities, and is intended to provide for maximum cooperation and coordination between and among the staff and operating agencies of the executive branch.

2. **Scope.** The ADP equipment affected by this Circular is that equipment identified in paragraph 2 of Bureau of the Budget Circular No. A–54, Policies on the selection and acquisition of automatic data processing (ADP) equipment, October 14, 1961.

3. **Responsibilities of the Bureau of the Budget.** The Bureau of the Budget will provide overall leadership and coordination of executive branch-wide activities pertaining to the management of automatic data processing equipment and related resources and will develop programs and issue instructions for achieving increased cost effectiveness through improved practices and techniques for the selection, acquisition and utilization of automatic data processing equipment and resources. In this connection, the Bureau of the Budget will:

a. Provide policies and criteria, procedures, regulations, information, technical advice and assistance to executive agencies.

b. Evaluate, through the review of agency programs and budgets and through other means, the effectiveness of executive agencies and the executive branch as a whole in managing automatic data processing equipment and resources.

c. Foster adequate Federal Government support of programs for developing voluntary commercial standards for automatic data processing equipment and techniques, arrange for the approval and promulgation of voluntary commercial standards when it is in the best interests of the Government to do so, and arrange for the development, approval and promulgation of Federal standards for automatic data processing equipment and techniques on an interim basis, or permanent basis, when voluntary commercial standards are not available or usable.

d. Support the development and promulgation of standard data elements and codes in Government systems, when such data elements and codes are in common use in some or all executive agencies.

e. Encourage the use of advanced techniques in the design of data systems and support research in advanced system design through demonstration projects.

f. Advocate intra-agency and interagency integration of systems.

g. Sponsor the development of a system which provides to line and staff officials at all levels of Government the information needed for effective management of automatic data processing equipment and related resources.

4. **Responsibilities of the General Services Administration.** The General Services Administration is responsible for aiding in the achievement of increased cost effectiveness in the selection, acquisition and utilization of automatic data processing equipment and appropriate related resources and will perform the following functions:

a. In connection with the selection of automatic data processing equipment, provide to executive agencies, on request, comparative information on the characteristics and performance capabilities of equipment and on the contractual performance of the firms that supply equipment and programming aids to the Government.

b. In connection with the acquisition of automatic data processing equipment (1) provide Federal Schedules of Supply for renting, purchasing and maintaining automatic data processing equipment, for use by executive agencies each fiscal year, (2) take such steps as may be feasible and necessary to insure to the extent practicable, that the Federal Schedules of Supply for ADP equipment each year will be available for use on the first day of that year, and (3) through continuous study and negotiation, seek improvements in the terms, conditions, and prices stated in Federal Schedules of Supply for automatic data processing equipment and services.

c. In connection with the utilization of automatic data processing equipment (1) develop and publish guidelines and criteria governing the replacement of equipment to avoid usage of such equipment beyond the point of economic advantage, (2) provide overall coordination and leadership of the executive branch in fostering the effective utilization of excess and disposal of surplus automatic data processing equipment, including rented, leased or owned equipment, and promulgate such regulations as may be needed to insure effective Government-wide screening and utilization of excess ADP equipment; and, further, to plan and undertake appropriate measures for coping with emerging problems associated with the management of excess and surplus automatic data processing equipment, (3) prepare Government-wide inventory reports and other statistical information pertaining to ADP equipment utilization, based upon reports submitted in accordance with applicable Bureau of the Budget circulars; and, further, to cooperate in the continuous refinement and improvement of management information systems relating to automatic data processing activities, (4) exercise leadership for the executive branch in the development and operation of arrangements which are designed to promote the sharing and joint utilization of automatic data processing equipment time and services within and among the executive agencies, and obtain such information on sharing practices as is necessary to evaluate the sharing program on a Government-wide and regional basis, including acquisition of equipment in connection with joint utilization programs, and (5) provide policies, guidelines and evaluation criteria for use by executive agencies in the maintenance of automatic data processing equipment.

d. In connection with the standardization of automatic data processing equipment and techniques, (1) promulgate standard purchase specifications based upon ADP standards which have been approved for adoption by the Federal Government, and (2) support programs for the development of voluntary commercial or Federal standards as they pertain to automatic data processing equipment and techniques and coordinate these activities with other executive agencies similarly involved.

e. In connection with automatic data processing equipment used with data communications systems, insure that planning for the Federal Telecommunications System embraces consideration of the rising need for data communication facilities which provide for high-speed data transmission between computer-based systems.

5. **Responsibilities of the Department of Commerce.** The Department of Commerce is responsible for aiding in the achievement of increased cost effectiveness in the selection, acquisition and utilization of automatic data processing equipment, and in this connection will perform the following functions:

a. Provide advisory and consultative services to executive agencies on the methods for developing information systems based on the use of computers and the programming and languages thereof.

b. Undertake research on computer sciences and techniques, including system design, oriented primarily toward Government applications.

c. Provide day-to-day guidance and monitorship of an executive branch program for supporting the development, measurement and testing of voluntary commercial standards for automatic data processing equipment, techniques and computer languages.

d. Improve compatibility in automatic data processing equipment procured by the Federal Government by recommending uniform Federal standards for automatic data processing equipment, techniques and computer languages.

6. **Responsibilities of the Civil Service Commission.** The Civil Service Commission is responsible for providing executive branch-wide leadership and assistance in the personnel management and manpower aspects of automatic data processing. In this connection, the Commission will foster programs designed to:

a. Staff automatic data processing activities effectively by, among other things, (1) formulating position classification and qualification standards, (2) developing necessary special recruiting techniques, (3) devising improved testing and selection devices, and (4) stimulating and coordinating necessary training.

b. Educate executives and other key personnel to achieve greater effectiveness in ADP management.

c. Anticipate and minimize, to the greatest practicable extent, any adverse effects of automatic data processing upon the people involved.

d. Provide a medium within the executive branch to focus and coordinate preparation for the future personnel management and manpower effects and requirements of automatic data processing.

7. **Responsibilities of the heads of executive agencies.** The heads of all executive departments and establishments are responsible for the administration and management of their automatic data processing activities including:

a. Agency-wide planning, coordination and control of equipment utilization.

b. Determination and use of those equipment applications that offer the greatest return in terms of increased effectiveness in mission accomplishment and higher productivity.

c. Development of data systems that employ the use of the most advanced design techniques.

d. Merger or integration of data systems irrespective of intra-agency or interagency organizational lines, when cost effectiveness in equipment utilization, data systems management, or program accomplishment can be increased.

e. Determination of automatic data processing equipment requirements.

f. Sharing equipment time and services within the agency, and with other agencies through support of the Government-wide program for sharing exchanges; cooperation in the establishment of service centers and other interagency joint use arrangements.

g. Consideration of the potential impact of the introduction of ADP equipment on the agency work force and taking such steps as are necessary to alleviate adverse effects to the greatest extent practicable.

h. Participation in Government-wide studies and programs for improving the administration and management of automatic data processing activities in the executive branch.

8. **Effective date.** The provisions of this Circular are effective immediately.

KERMIT GORDON
Director

4.7. BOB Circular A–86, Standardization of data elements and codes in data systems (September 30, 1967)

EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET
WASHINGTON, D.C. 20503

September 30, 1967 CIRCULAR NO. A–86

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Standardization of data elements and codes in data systems

1. **Purpose.** This Circular identifies responsibilities and provides policies and guidelines for the management of activities in the executive branch regarding the development and application of standard data elements and their related codes in data systems.

This Circular is issued under the authorities of Sections 103 and 104 of the Act of September 12, 1950 (31 U.S.C. 18a and 18b), Executive Order No. 10253 dated June 11, 1951, and the Act of October 30, 1965 (Public Law 89–306). This Circular complements the standards and recommendations that have been or may be issued under the statistical procedures prescribed by Circular No. A–46. Data elements and codes which are required to be unique for use in cryptologic activities are excluded from the provisions of this Circular.

2. **Background**. Technological advances in computers, communications and allied fields make possible the integration of data systems and the aggregation and exchange of data among them on an expanding scale. These advances have contributed to substantial cost reductions and improvements in systems and services. The full effect of these advances will not be realized, however, unless the need for uniform understanding (definition) of the common information (data elements) and expression of them (codes) in data systems is recognized and a means provided to develop and apply desirable standards. There are increasing interrelationships developing among the data systems of Federal, State and local governments, and with industry and the public, that add emphasis and dimension to this need.

3. **Objectives.** The ultimate goal is to achieve the greatest practicable degree of uniformity in data elements and codes used among related data systems. The chief objectives are—

a. to facilitate the summation of information and thereby enhance the exchange of information among data systems;

b. to facilitate the review and analysis of the budget processes and programs of the executive branch concerning more than one agency;

c. to encourage the extension of the principle of systems integration under which information can directly be communicated among data systems without interrupting the process for translations or conversions; and

d. to contribute to improving the products and effectiveness of data systems.

4. **Definitions.** For the purpose of this Circular, the terms "data element" and "data code" are defined as follows:

a. A **data element** is a grouping of informational units which has a unique meaning based on a natural or assigned relationship and subcategories (data items) of distinct units or values. For example, "month" is a data element whose data items are "January," "February," "March," etc.

b. A **data code** is a number, letter, symbol or any combination thereof used to represent a data element or a data item.

5. **Kinds of standards.** For the purpose of this Circular, the kinds of standard data elements and codes are identified as follows—

a. **International standards.** A wide range of standards, including data elements and codes, having broad acceptance and the approval of the International Standards Organization, for voluntary use by a community of nations.

b. **United States of America standards.** A wide range of standards, including data elements and codes, having broad acceptance and the approval of the United States of America Standards Institute (formerly the American Standards Association), for voluntary use by Government and industry on a national scale.

c. **Federal standards (data elements and codes).** Standards, promulgated under the provisions of this Circular, for use in the executive branch. In terms of application, there are two categories of Federal standards—

(1) **General use.** Federal general standards (such as for countries, States, counties, places, organizations, individuals and elements of time) for general use by most agencies in connection with an extensive number and variety of related or unrelated data systems and programs.

(2) **Program use.** Federal program standards for use in particular related programs concerning more than one agency. Examples are data elements and codes usually limited to use in weather, personnel, supply, and other similarly unique systems. In these cases, the same source data often are used by several agencies and aggregation and exchange of information on a program basis are the rule.

d. **Agency standards (data elements and codes).** Standards limited for use within the programs of a particular agency and either not applicable to or not yet incorporated into a Federal standard.

6. **Policies.** The following policies apply to the development and application of standard data elements and codes under this Circular—

a. Data elements and codes that can effectively be applied to the data systems of more than one agency will be promulgated as Federal standards. Federal general standards will be promulgated by or at the direction of the Bureau of the Budget.

Federal program standards will be promulgated by the agency determined by the Bureau of the Budget to have the predominant interest in particular standards.

b. Expected technical, operating or economic benefits, or improvements in services are to be considerations in the decision to adopt particular standards.

c. Data elements and codes already in use will be adopted as Federal standards wherever practicable if they meet Federal requirements. United States of America or International standards will also be adopted under the same circumstances.

d. Promulgation of standards under this Circular will include a specification of applicability and a time-phased implementation schedule.

7. **Responsibilities.** Responsibilities under this Circular are outlined below. Exhibit 1 depicts these responsibilities in terms of actions taken in respect to the kinds of standards involved.

a. **Bureau of the Budget.** The Bureau of the Budget will provide leadership of a program for standardizing data elements and codes for use in the executive branch and in this connection will—

(1) Utilize the Federal Automatic Data Processing Advisory Council to advise the Bureau of the Budget regarding standards activities covered by this Circular.

(2) Arrange for appropriate departments and establishments to develop and maintain specific Federal general and Federal program standards.

(3) Arrange for liaison with organizations representing industry and State and local governments on standards of mutual interests.

(4) Approve, and arrange for the promulgation of Federal general standard data elements and codes covered by this Circular.

(5) Publish (with periodic revisions) a list of agency points of contact (see paragraph 7b.(8)).

(6) Provide for the preparation of guidelines and criteria to assist agencies, task forces and equivalent groups in developing standards.

b. **Departments and establishments.** Each agency will—

(1) Use the Federal standards announced under the provisions of this Circular whenever data are exchanged between and among agencies and to the maximum possible extent in meeting its own data system requirements.

(2) Assume such responsibilities as may be requested under paragraph 7a.(2) for organizing and chairing Government task forces or equivalent groups to develop and maintain Federal standards.

(3) Conduct the analyses necessary to provide recommendations to the Bureau of the Budget on specific Federal general standards assigned under paragraph 7a.(2). Included will be a summary of the agency consensus reached and the objections recorded or exceptions requested (and if and how they were satisfied), the scope of applicability, a time-phased plan for implementation, the benefits to be expected and cost implications.

(4) On its own initiative, or at the request of the Bureau of the Budget, conduct the analyses necessary, with participation of interested agencies, to develop appropriate Federal program standards and announce, implement and maintain such standards as are agreed upon among the agencies principally concerned. The agency points of contacts (see paragraph (8) below) are to keep the Bureau of the Budget informed on the progress and results of such efforts. Such standards as are approved will be forwarded to the National Bureau of Standards for inclusion in the Register of Program Standards.

(5) Develop Agency standards for data elements and codes where operations or services can be improved and there is no conflict with existing or proposed Federal general or Federal program standards and provide (with periodic revision) to the National

Bureau of Standards the title and definition of such agency standards in effect in or under consideration by the agency.

(6) Provide appropriate representation on Government task forces or equivalent groups as may be established to develop Federal general or Federal program standards. Such representation should be from organizations having the predominant or a substantial interest.

(7) Recommend to the Bureau of the Budget actions to improve the program as a whole and areas having a potential for the development of standards.

(8) Designate a single office as the central point of contact on matters pertaining to this Circular.

c. **National Bureau of Standards.** The National Bureau of Standards will—

(1) Maintain a "Register of Data Elements and Codes—Federal General Standards." The Register will serve to record and codify Federal general standards approved under this Circular. The Register will be either the media for publishing announcements of Federal general standards or the point of identification and reference to the source if elsewhere published.

(2) Maintain a "Register of Data Elements and Codes—Federal Program Standards." The Register will serve to record and codify Federal program standards approved for use by agencies responsible for such standards. The Register will be either the media for publishing announcements of Federal program standards or the point of identification and reference to the source if published elsewhere.

(3) Maintain a "Reference File of Data Elements and Codes—Agency Standards." This file will identify Agency standards in effect and areas in which agencies are investigating adoption of standards. It will serve as an inventory of Agency standards and efforts to develop standards. The publication of Agency standards is the responsibility of agencies.

(4) Maintain an "Informational Register of Data Elements and Codes—International and American Standards." This register will identify standard data elements and codes that have been approved by the International Standards Organization or the United States of America Standards Institute or that may at any one time be the subject of development by them. It will serve as a point of inquiry for agencies regarding the status of such efforts. An abstract of the Informational Register will be distributed annually or more often if advisable to the central points of contact identified in paragraph 7b.(8)

(5) Provide technical advice and assistance, relating to automatic data processing and related data systems, to task forces or equivalent groups as may be established to develop Federal general and Federal program standards.

d. **Development of United States of America Standards.** The United States of America Standards Institute may from time to time request Government participation to develop particular American Standards for data elements and codes. In such cases, a "senior representative" will be named whose function will be to coordinate Federal participation to assure that all the factors essential to Government interests are brought to bear on the deliberations of the Institute.

(1) Where a Government or interagency task force or equivalent group exists, to develop a Federal standard for the same or similar purpose, the Chairman thereof should assume the role of senior representative.

(2) Where such a task force or equivalent group does not exist, the Bureau of the Budget will arrange that an agency, having the predominant or a substantial interest, name the senior representative.

8. **Promulgation, implementation and maintenanc of Federal general standards.** The Bureau of the Budget will promulgate Federal general standards for data elements and codes by arranging for the issuance of announcements by the National Bureau of Standards. In addition to the Federal general standard(s), the announcements will include—

a. an identification of the agency that will maintain the standard(s). The named agency should keep current with the progress of implementation.

b. a specification of applicability and authorized exceptions, and

c. time-phases within which the standard(s) will be implemented.

9. **Exceptions, deferments and revisions of Federal general standards.** The procedure for requesting exceptions or deferments or for recommending revisions to Federal general standards is as follows—

a. Requests for **exceptions,** not covered in an announcement, will be directed to the agency responsible for the standard. That agency will add its recommendations and forward it to the Bureau of the Budget.

b. Requests for **deferments,** regarding implementation dates contained in an announcement, will follow the procedure prescribed for exceptions when the request is for a deferment of over one year. Departments and establishments may revise implementation dates for good cause where the deferment does not exceed one year by forwarding a notification of such action to the agency responsible for the standard, stating the circumstances involved.

c. Recommendations for **revisions** to standards already announced will be directed to the agency responsible for the standard. That agency will utilize a task force, an ad hoc group, or take other appropriate steps to consider the proposal and formulate its recommendations to the Bureau of the Budget.

10. **Promulgation, implementation and maintenance of Federal program standards.** Agencies that have assumed the responsibility under the provisions of paragraph 7b.(4) to develop Federal program standards are also responsible for their promulgation, implementation and maintenance. Promulgation of Federal program standards will follow the same procedure and be of the same content as for Federal general standards identified in paragraph 8.

11. **Exceptions, deferments and revisions of Federal program standards.** Requests for exceptions or deferments or recommendations for revisions to Federal program standards are to be directed to the agency that has promulgated the standard. That agency is responsible for taking final action on the requests and recommendations.

CHARLES L. SCHULTZE
Director

Attachment

EXHIBIT 1
Circular No. A–86

PROGRAM FOR DEVELOPING STANDARD DATA ELEMENTS AND CODES

TYPES OF ACTIONS	KINDS OF STANDARDS			
	Federal General Standards	Federal Program Standards	Agency Standards	American Standards [1]
Initiation of efforts	BOB	Program Agency (or BOB)	Option of agency concerned	USASI
Method of development [2]	Government Task Force (or equivalent)	Interagency effort	Option of agency concerned	X3.8 Sub-committee of USASI
Recommendations	To BOB	To Program Agency	Option of agency concerned	To X3 Committee of USASI
Approval	BOB	Program Agency	Agency	USASI
Maintenance	Named Agency	Program Agency	Agency	As necessary
Publication: a. Preparation and distribution	NBS	Program Agency	Agency	USASI
b. Registration	NBS "Register of Federal General Standards"	NBS "Register of Federal Program Standards"	NBS "Reference File of Agency Standards"	NBS "Information Register of USASI Standards"

[1] Industry and Government participation at all stages.
[2] Agency, intergovernmental, and other representation as appropriate.

4.8. NBS Authority for Establishment and Maintenance of FEDERAL INFORMATION PROCESSING STANDARDS REGISTER (FIPS REGISTER), BOB Letter dated September 11, 1968

EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET
WASHINGTON, D.C. 20503

September 11, 1968

Dr. A. V. Astin
Director
National Bureau of Standards
Washington, D. C. 20234

Dear Mr. Astin:

This letter assigns to the National Bureau of Standards the responsibility for establishing and maintaining a Federal Information Processing Standards Register (FIPS Register). The purpose of the FIPS Register is to serve as the official source of information in the Federal Government pertaining to:

1. uniform Federal automatic data processing standards resulting from the provisions of Public Law 89–306, and

2. data elements and codes standards in data systems developed under the provisions of Bureau of the Budget Circular No. A–86.

The FIPS Register will be established in five sections:

1. Hardware Standards
2. Software Standards
3. Application Standards
4. Data Standards
5. Index.

The National Bureau of Standards will organize each section of the Register to reflect subclassifications of standards that may be required and will devise a numbering system that will identify approved standards so that each may be simply indexed and accessed. Each approved standard that is registered (and changes thereto) will be promulgated to all agencies in the form of a Standards Announcement. The Standards Announcement will follow the enclosed approved format and description as closely as possible (Enclosure A).

The National Bureau of Standards will take steps promptly to inform all agencies of the establishment of the FIPS Register and to provide a description of its purpose, format and operation in such a manner as to permit each agency to organize and maintain its own FIPS Register through the appropriate filing of Standards Announcements.

Enclosed also are three standards which are approved pursuant to the provisions of Bureau of the Budget Circular No. A–86. The enclosures contain the information necessary, in the form of the approved format of the Standards Announcement, to register these standards in the Data Standards Section of the FIPS Register and to announce them to all agencies. The three standards are:

1. Federal General Data Standard—Calendar Date (Enclosure B)
2. Federal General Data Standard—States of the United States (Enclosure C)
3. Federal General Data Standard—Counties of the States of the United States (Enclosure D).

Sincerely,

Joseph P. Cunningham
Deputy Director
General Government
Management Division

Enclosures

4.9. Role of FIPS Coordinating and Advisory Committee and Method of Operation of FIPS Task Groups

ROLE OF FIPS COORDINATING AND ADVISORY COMMITTEE AND METHOD OF OPERATION OF FIPS TASK GROUPS

May 12, 1969

(a) Role of FIPS Coordinating and Advisory Committee

The Center for Computer Sciences and Technology in the National Bureau of Standards in performing its functions in developing proposed Federal Information Processing Standards under the Brooks Bill (P.L. 89–306) needs to obtain advice and assistance from other Federal agencies. One way of obtaining this is by means of ad hoc Task Groups formed to review proposed NBS actions and to deal with specific standards problems. The FIPS Coordinating and Advisory Committee will serve as a vehicle for coordinating the work assignments to such FIPS Task Groups, and as a general advisory group to NBS on Information Processing Standards.

The FIPS Coordinating and Advisory Committee will consist of (1) the Chief of Office of Information Processing Standards, Center for Computer Sciences and Technology, NBS, as Chairman, (2) the Chairmen of the FIPS Task Groups, (3) the Chairman of the Interagency ADP Committee, and (4) such other members as the Chairman of the FIPS Coordinating and Advisory Committee may designate. The composition of the Committee will also include members from NBS, BOB, and GSA, the three agencies principally responsible for carrying out the provisions of the Brooks Bill.

(b) Purpose of Task Groups

NBS recognizes that it must coordinate its Standards Program on an inter-agency basis. It is the purpose of FIPS Task Groups to assist NBS to provide better coordination of the Federal ADP standards program. Technical personnel with a knowledge of each agency's requirements can assist NBS in matters regarding development, adoption, and implementation of the standards.

This participation by agencies will enable NBS to gain greater insight into their respective agency problems and requirements. Such participation also allows NBS to more effectively evaluate its own standards program, and focus efforts on Agency needs.

(c) Specific Role of Task Groups

The National Bureau of Standards is charged under the Brooks Bill (P.L. 89–306) with recommending uniform Federal ADP standards through the Secretary of Commerce and the Bureau of the Budget to the President of the United States. This responsibility requires detailed coordination with and advice from Federal departments and agencies regarding their ADP operations and objectives. FIPS Task Groups will be organized on a selective basis for such purposes as: (1) providing advice to NBS on specific draft proposals in the standards area, (2) making recommendations on specific problems, and (3) developing draft proposals in specific standards problem areas, as assigned in work scope statements.

(d) Initiation of Task Groups

Four Task Groups have already been established to deal with (1) Definition of Federal Information Processing Standards objectives and requirements, (2) Recommendations on Standard Control Procedures and Header Formats for Remote Computer Terminals, (3) Recommendations on ASCII character subsets, Algebraic Sign Conventions, and Packing Techniques, and (4) Preparation of Subsections for Uniform Implementation of Approved Federal ADP Standards for Inclusion in Requests for Proposals.

The need for any additional Task Groups will be considered by the FIPS Coordinating and Advisory Committee. Such additional FIPS Task Groups will be formed, as required, by NBS. For each new Task Group, NBS will inform the Interagency ADP Committee of the scope of work proposed and invite participation of appropriately qualified technical representatives. In addition, NBS will send a letter to appropriate department heads (selected in accordance with the nature of the specific problem) to request qualified participants.

(e) Approval of Task Group Work Programs

In order to insure a system approach and to avoid duplication of efforts, task group work assignment statements must be coordinated. Therefore, such work statements will be reviewed by the FIPS Coordinating and Advisory Committee and approved by NBS. Specifically, the Coordinating and Advisory Committee will review the initial statement of scope and broad program of work for each FIPS Task Group; and subsequently request each Task Group to develop detailed work plans with target dates for completion of sub-tasks and the work assignments as a whole. Subsequent revised work statements and completion dates would then be subject to review and approval as above. Task Groups which are unable to complete their assigned tasks by the scheduled dates should notify the Coordinating Committee as soon as foreseen, giving the reasons therefor.

(f) Internal Operation of Task Groups

Each Task group's effort will be directed toward accomplishing the tasks in its approved work statement. A task will normally be to review a proposed recommendation or directive concerned with Federal Information Processing Standards. On occasion, however, a task may consist of developing a draft proposed standard in a particular area. In any event, the final product will be a recommendation to NBS via the FIPS Coordinating and Advisory Committee as outlined in (h) below.

In conducting the business of the Task Group, the keeping of formal minutes and other associated documents should be minimized consistent with the accomplishment of the Task Group's work.

When a consensus cannot be reached by a task group on a particular matter, the majority view will form the basis of the recommendation. However, minority positions will accompany the recommendation forwarded to the FIPS Coordinating and Advisory Committee.

(g) Life of Each Task Group

Upon the completion of all of its assigned tasks, a task group will be dissolved by NBS with the advice of the Coordinating and Advisory Committee.

(h) Transmittal of Task Group Recommendations

Task Group recommendations will be transmitted to the Secretary of the FIPS Coordinating and Advisory Committee for the Committee's review and comments. Recommendations of FIPS Task Groups, with the comments of the FIPS Coordinating and Advisory Committee, will be considered as advice to NBS. The Chairman of FIPS Coordinating and Advisory Committee in his dual role as Chief of the Office of Information Processing Standards will receive the recommendations as advice to NBS.

The Chairman of the Interagency ADP Committee (as a member of the FIPS Coordinating and Advisory Committee) will inform the membership of the Interagency ADP Committee as appropriate about the work of the FIPS Task Groups.

(i) Extent to Which Task Group Members Represent Their Agencies

Members of FIPS Task Groups will participate as qualified experts having knowledge of their agencies' interests in the subject under study. The FIPS Task Groups will not, however, replace the formal solicitation by NBS of agency comments on proposed Federal standards (as outlined in BOB Guidance Letter to the Secretary of Commerce dated December 15, 1966). Accordingly, each agency is not bound by the individual views of its Task Group representative.

Approved: H. R. J. Grosch, May 12, 1969

Director,
Center for Computer Sciences and Technology

4.10. Draft FIPS Pub, OBJECTIVES AND REQUIREMENTS OF THE FEDERAL INFORMATION PROCESSING STANDARDS PROGRAM

TG–1 Report
September 1969
Revised by
FIPSCAC
November 1969
Revised by NBS
February 1970

DRAFT FIPS PUB
OBJECTIVES AND REQUIREMENTS
OF THE
FEDERAL INFORMATION PROCESSING STANDARDS PROGRAM

Introduction

Public Law 89–306 (The Brooks legislation) was enacted to provide for the economic and efficient purchase, lease, maintenance, operation and utilization of automatic data processing equipment by Federal departments and agencies. Among the other provisions of PL 89–306, the Secretary of Commerce is authorized to make appropriate recommendations to the President relating to the establishment of uniform Federal automatic data processing standards. The Federal Information Processing Standards

Program was established in response to this part of the legislation. The purpose of this document is to outline the objectives of the Federal Information Processing Standards Program and to identify requirements for specific standards to accomplish these objectives.

This document has been approved by the Bureau of the Budget [1] on the recommendation of the National Bureau of Standards. The document deals for the most part with the Department of Commerce responsibility for recommending uniform automatic data processing standards to the President of the United States. It is recognized, however, that some parts of it may overlap the responsibilities of other agencies, particularly the General Services Administration and the Office of Telecommunications Policy. The NBS recommendation to the Bureau of the Budget has been concurred in by these agencies [2] in so far as it affects their respective areas of responsibility.

This document reflects, where applicable, the views of the conference on the Selection and Procurement of Computer Systems by the Federal Government, held at Charlottesville, Virginia, September 15, 16, 17, 1969.[3] In particular, the views of the Charlottesville conference relating to interface standards are encompassed in Objective IC, and requirement IC(1)(a); the views relative to reducing the time and cost in the selection and procurement of ADP equipment in Objectives III and VI, with the specific task of developing standard benchmark tests in Requirement III A(1); and the views on the development of a Federal ADP Products Catalogue in Requirement VI A(2).

Background

The Federal Government is the largest single user of information processing equipment. Since the introduction of the first general purpose computer in 1951 use has increased to where there were approximately 4800 computers in the Federal Government in July 1969. The establishment of information processing standards was not recognized as a significant factor in the early years of Government computer use since there were only a small number of manufacturers and a limited selection of available equipment. Information systems were generally independent of other systems and those standards that were established were done so on strictly a local basis. However, as the technology advanced and as the number of applications of information processing systems increased, the need for standardization became more apparent. Large systems now being acquired by the Government include complex networks of peripheral devices and central processing units and frequently these interface with extensive systems of world-wide telecommunications.

A practice used by some agencies in the past in acquiring multiple computer systems has been to procure these from a single manufacturer. Acquisitions of this type provide a certain amount of standardization and compatibility within a given environment. In many cases the manufacturer provided nearly all the system components including communications hardware. However, this type of "single vendor" procurement did not provide compatibility with other systems acquired from other manufacturers. Furthermore, this approach to establishing standards by procuring equipment and services from a single manufacturer resulted in unbalanced competition.

An approach to solving this complicated situation is to regard the Federal Government as a single unified system and establish standards designed to achieve the maximum

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[1] (Draft only)—BOB has not yet approved this draft.
[2] (Draft only)—GSA and OTP have not yet concurred in this draft. Their concurrence will be obtained, however, before forwarding it to BOB.
[3] Report of the Conference on the Selection and Procurement of Computer Systems by the Federal Government, Federal Executive Institute, Charlottesville, Virginia, September 15, 17, 19, 1969, issued informally by the Bureau of the Budget.

degree of compatibility within this system. Federal agencies would be required to implement and comply with the standards developed for the system. This approach has more reaching and lasting benefits than the practice described above in that the interchangeability of equipment, programs and data throughout the entire Federal establishment would extend the usefulness of Federal systems and reduce their costs.

Program Objectives

I. DATA, PROGRAMS AND COMPONENTS
- A. To facilitate the interchange of machine sensible data within and among data processing installations.
- B. To facilitate the interchange of computer programs among computers of different makes and models.
- C. To facilitate the interchange of computer components and devices across product lines.

II. DATA COMMUNICATIONS
- A. To establish, where applicable, common standards for both information processing and data communications.
- B. To facilitate the interfacing of information processing and data communications systems.

III. COMPUTER PERFORMANCE
- A. To provide objective measures of performance for Federal computing systems, components and software packages.

IV. APPLICATIONS AND DATA
- A. To eliminate unnecessary reinvention of like computer applications throughout Government departments and agencies.
- B. To facilitate the interchange of data at the data element level.

V. PERSONNEL AND ENVIRONMENT
- A. To maximize the productivity of technical personnel working with Federal information processing systems.
- B. To reduce the need for retraining in programming, operations and maintenance due to differences in manufacturers' products and systems.
- C. To develop guidelines for ADP and telecommunications site preparation and environment.

VI. ACQUISITION AND REASSIGNMENT OF ADP PRODUCTS
- A. To provide tools for optimizing computer selection.
- B. To facilitate and speed-up the mechanics of acquiring information processing systems, components, software and related material, supplies and services.
- C. To protect current investments in computer programs, data files and personnel when acquiring new equipment.
- D. To facilitate the procurement of portions of multiple CPU computer systems from different suppliers.
- E. To facilitate the procurement of components of a single CPU system, particularly peripheral devices, from different suppliers.

To achieve these goals, the program must progress in a systematic timely manner. Standards cannot be established on an ad hoc basis but must be properly coordinated to assure consistency among individual standards. Priorities need be given those standardization

development efforts having the most need and potential benefits. Implementation of standards must be planned and phased in a realistic manner to minimize disruption and costs.

Standards Requirements
It is recognized that the specific requirements for standards will change over time as information processing technology develops. Thus, it will be necessary that they be revised from time to time. Further, the requirements listed here are not complete even for the current instant of time. In general, the standards requirements listed for each objective are necessary. They may or may not be sufficient.

In order to indicate the relationship between requirements and objectives in the following listing, the objectives are repeated. Some requirements relate to more than one objective. Where this is the case, the requirement is cross referenced rather than repeated. Requirements that have already been completely or partially met by a Federal Information Processing Standard are marked with an asterisk. Requirements for which a draft Federal Information Processing Standard has been proposed are marked with a double asterisk.

I. DATA, PROGRAMS AND COMPONENTS

A. To facilitate the interchange of machine sensible data within and among data processing installations.

(1) **Character sets and codes**
- (a) Code for information interchange*
- (b) Subsets of the code for information interchange**
- (c) Registration of expanded and extended codes for particular application areas.

(2) **Media**
- (a) Unrecorded and recorded magnetic tape for densities of 200, 800 and 1600 cpi*
- (b) Unrecorded and recorded magnetic disks and disk packs (6 and 11 high)
- (c) Reference tapes and disks and measuring techniques for evaluating manufacturers' products and calibrating read/record equipment
- (d) Formats for magnetic tape and disk labels
- (e) Punched cards including card quality and dimensions, locations of holes and data representation**
- (f) Perforated tape and reels including tape quality and dimensions, locations of holes and data representation*

(3) **Character recognition**
Optical character recognition standards to include upper and lower case font or fonts, print quality, layout of forms, and other related items.

B. To facilitate the interchange of computer programs among computers of different makes and models.

(1) **Programming languages**
- (a) Programming language standards for those languages in common use such as COBOL, FORTRAN and JOVIAL.
- (b) Standard levels for programming language compilers based on appropriate standard languages (COBOL, FORTRAN, etc.).
- (c) Decision tables.
- (d) Data descriptive language.

(2) **Operating systems**
- (a) Standards for interfacing operating systems, compilers, and application programs.

C. To facilitate the interchange of computer components and devices across product lines.
   (1) **Interface standards**
      (a) Standards for electrical, mechanical and logical interface between the IP Central Processing Unit and input/output peripheral devices, inc uding magnetic tape drives, magnetic disk drives, perforated tape drives, punched card equipments and display devices.
      (b) Standards for the electrical, mechanical and logical interface between IP systems and telecommunications systems.

II. DATA COMMUNICATIONS
A. To establish, where applicable, common standards for both information processing and data communications.
   (1) **Interchange Codes**
      (a) Same as IA(1)
   (2) **Character Structures and Formats**
      (a) Bit sequencing in serial-by-bit data transmission.**
      (b) Character structure and character parity sense for serial-by-bit data communication.**
      (c) Character structure and character parity sense for parallel-by-bit data communication.**
   (3) **Operating Procedures**
      (a) Formats and procedures for the operation of:
         1. Data communication links isolated from switched communication networks.
         2. Message and circuit switched communication networks.
         3. Communicating with time shared computer systems.
         4. Error detection and correction.

B. To facilitate the interfacing of information processing and data communications systems.
   (1) **Interface standards**
      (a) Signal quality at interface between IP terminal equipment and synchronous data communication equipment for serial data transmission.
      (b) Synchronous signaling rates for data transmission.
      (c) Interface between data terminal equipment and data communications equipment employing serial binary data interchange.
      (d) Interface between data terminal equipment and automatic calling equipment for data communications equipment.

III. COMPUTER PERFORMANCE
A. To provide objective measures of performance for Federal computing systems, components and software packages.
   (1) **Benchmark programs.**
   (2) **Computer performance simulators**
   (3) **Computer performance monitors**
      (a) Hardware
      (b) Software
   (4) **Analytic Evaluation Techniques**

IV. APPLICATIONS AND DATA
A. To eliminate unnecessary reinvention of like computer applications throughout Government departments and agencies.

(1) **Classification**
Classification of common computer applications and their variations.

(2) **Application Standards**
(a) Application packages for common applications such as payroll, budgeting, personnel management, and telecommunications to eliminate recreating, documenting, and maintaining the same programs in the various Federal agencies.
(b) Utility programs such as sorts, merges, automatic flowcharting, machine utilization accounting, etc.
(c) Network-oriented information systems such as PERT and CPM.

B. To facilitate the interchange of data at the data element level.

(1) **Data Standards**
(a) Data elements, codes, and record formats for data commonly interchanged among agencies.*
(b) Methods (other than programming languages) for specifying data formats and the data contained therein.
(c) Procedures and guidelines for standardizing data for use by the Federal agencies.

V. PERSONNEL AND ENVIRONMENT

A. To maximize the productivity of technical personnel working with Federal information processing systems.

(1) **Documentation**
(a) Documentation standards for describing information processing and telecommunications systems to include flowcharting, program logic, operation manuals, and general system descriptions.
(b) Hand printed characters.
(c) Vocabulary of terms and definitions to be used in describing information processing and telecommunications systems and related fields.

(2) **Man-machine interface**
Operating system control language.

B. To reduce the need for retraining in programming, operations and maintenance due to manufacturers products and systems.

(1) **Keyboards**
Keyboard arrangements for data preparation and data communications terminal devices.

C. To develop guidelines for ADP and telecommunications site preparation and devices.

(1) **Environmental standards**
Standards or guidelines for ADP and telecommunications site preparation and environment.

(2) **Operating procedures**
Procedures for machine utilization accounting.

VI. ACQUISITION AND REASSIGNMENT OF ADP PRODUCTS

A. To provide tools for optimizing computer selection.

(1) Same as III.
(2) To catalogue, validate and evaluate available computer components, soft-

ware packages and ultimately all EDP products for use in Federal EDP procurement.

B. To facilitate and speed up the mechanics of acquiring information processing systems components, software and related material, supplies and services.
   (1) **Selection and Procurement**
      (a) A standard outline and format to be followed when formulating procurement solicitations. This will include methods for describing processing requirements, current and projected workloads and mandatory hard/ware/software features.
      (b) A standard procedure and guideline for evaluating manufacturers proposals.
      (c) A standard procedure and guideline for the selection of information processing systems. This standard will include (as applicable) a family of standard benchwork programs and standard criteria for measuring the overall systems performance.
      (d) A standard procedure for the separate acquisition (other than Original Equipment Manufacturers—OEM) of systems software including compilers, diagnostics, other general utility programs, and associated services.
      (e) Standard criteria for measuring the performance of both OEM and non-OEM software.
      (f) Standard criteria for measuring the performance of hardware components both OEM and non-OEM.
      (g) A standard procedure and guideline for the separate acquisition (other than OEM) of hardware components including peripheral devices.

C. To protect current investments in computer programs, data files and personnel when acquiring new equipment.
   (1) Standards listed in I A,B and IV A,B.

D. To facilitate the procurement of portions of multiple CPU computer systems from different suppliers.
   (1) All of I and II.

E. To facilitate the procurement of computers of a single CPU system, particularly peripheral devices, from different suppliers.
   (1) I A,C.

Relationship to ANSI and ISO Standards

It is recognized that information processing standards are being developed nationally under the auspices of the American National Standards Institute (ANSI) and internationally under the auspices of the International Organization for Standardization (ISO). It is important that Federal computers and information systems be compatible not only with each other, but also with those of state and local governments, the private sector of the economy and those of other nations. Accordingly, standards developed to meet Federal requirements should, to the extent practicable, be consistent with corresponding ANSI and ISO standards. This should not, however, prevent the Government from (1) adopting standards on its own in cases where ANSI and ISO standards do not exist or are inadequate, not from (2) modifying ANSI and ISO standards where they do not completely meet Federal requirements, nor from (3) embarking on independent standards development efforts in cases where ANSI and ISO efforts do not exist, or are too slow, or are leading to results which will not satisfy the Government's needs.

5. Standardization Activities

5.1. Federal Government

5.1.1. Interagency Committee on ADP (IAC/ADP)

The Interagency Committee on Automatic Data Processing was initially organized by the Bureau of the Budget in the late 1950's to provide a medium for consideration of common problems being encountered by agencies in making effective use of the new computer technology. It has continued in existence without interruption under various forms of organization. Today its membership consists of representatives from 51 Federal agencies from which a chairman and vice chairman are elected annually. Staff support is provided by the Office of Management and Budget.

The Committee, which meets monthly, provides a medium for the exchange of information on management and technological developments, serves as a forum for the discussion of policies and regulations being proposed by the central management agencies, and initiates studies on matters on which the Committee wishes to formulate views and recommendations for consideration.

Chairman: Mr. Victor J. Cavagrotti, Director
Bureau of Manpower Information Systems
U.S. Civil Service Commission
1900 E Street, N.W.—Room 6425
Washington, D.C. 20415
202–632–6814

Principal Members	Department or Agency
Colonel Andrew Aines	Office of Science and Technology
Mr. David B. Albright	Department of Housing and Urban Development
Mr. B. G. Anderson	Post Office Department
Mr. Clayton P. Balzer	United States Information Agency
Mr. E. W. Barrett	National Science Foundation
Mr. Ralph L. Bell	Securities and Exchange Commission
Mr. Rodney J. Brown	Department of the Interior
Mr. John C. Catale	Small Business Administration
Mr. Victor J. Cavagrotti	US Civil Service Commission
Mr. Harry Clarke	Veterans Administration
Mr. Allan Craig	Civil Aeronautics Board
Mr. David M. Dale	Agency for International Development
Mr. John A. Delaney	Federal Trade Commission
Mr. Arthur T. Devlin	Department of Agriculture
Mr. Frank P. DeBlasi	Department of State
Mr. George Dodson, Jr.	General Services Administration
Mr. J. Patrick Dugan	Export-Import Bank of the US
Mr. Jules B. DuPeza	Department of Transportation
Mr. L. E. Eady	Federal Mediation and Conciliation Service
Mr. Edward Goodstein	National Labor Relations Board
Mr. H. P. Gibbons	Railroad Retirement Board
Mr. James W. Gray	Department of Labor
Mr. Norbert Halloran	Administrative Office of the US Courts
Mr. J. N. Hand	Federal Communications Commission
Mr. Robert J. Hartel	Interstate Commerce Commission
Mr. Martin O. Hochdorf	Tennessee Valley Authority
Mr. Robert L. Johnson	Department of Commerce
Mr. Richard A. Kear	Federal Power Commission
Mr. Philip B. Kennedy	Central Intelligence Agency
Mr. Stanley Kovy	Smithsonian Institution
Mr. Donald P. Libera	National Capitol Housing Authority
Mr. Charles C. Lowe	Government Printing Office
Mr. Kenneth McGill	Selective Service System
Mr. Edward J. Mahoney	General Accounting Office
Mr. Vincent A. Mariner	United States Tariff Commission
Mr. Kenneth Morris	Department of Health, Education & Welfare
Mr. Hubert P. Nucci	Peace Corps
Mr. Robert A. Raup	Department of Defense
Mr. Paul C. Redmer	Farm Credit Administration
Mr. Paul R. Reimers	Library of Congress
Mr. Nicholas V. Schauer	Department of the Treasury
Mr. Richard G. Shook	Atomic Energy Commission
Mr. Larry Shute	Department of Justice
Mr. Jerold E. Slocum	Federal Reserve System
Mr. Nicholas Suszynski	Federal Deposit Insurance Corporation
Mr. Daniel A. Walton	District of Columbia Government
Mr. Kenneth Webster	National Aeronautics and Space Administration
Mr. Gilmore S. Wheeler	Office of Economic Opportunity
Mr. Stanley Winkler	Office of Emergency Preparedness
Mr. Thomas P. Wood	Federal Home Loan Bank Board

5.1.2. Federal Information Processing Standards Coordinating and Advisory Committee (FIPSCAC)

The Role of the FIPS Coordinating and Advisory Committee (FIPSCAC) is explained in section 4.9 above. The membership of FIPSCAC is made up of (1) the Chief of the Office of Information Processing Standards, Center for Computer Sciences and Technology, National Bureau of Standards, as Chairman, (2) the Chairmen of the FIPS Task Groups, (3) the Chairman of the Interagency Committee on ADP, and (4) such other members as the Chairman of FIPSCAC may designate. The composition of the Committee includes members from NBS, OMB, and GSA, the three agencies principally responsible for carrying out the provisions of the Brooks Bill. Present membership consists of the following:

Chairman: Dr. Joseph O. Harrison, Jr.
Chief, Office of Information Processing Standards
National Bureau of Standards
Washington, D.C. 20234
301–921–3551

Members	Affiliation
Dr. Joseph O. Harrison, Jr., Chairman	National Bureau of Standards
Mr. J. T. O'Neill, Secretary	National Bureau of Standards
Mr. Harry S. White, Jr.	National Bureau of Standards
Mr. Victor J. Cavagrotti	Interagency Committee on ADP
Mr. Clark Renninger	Office of Management and Budget
Mr. George W. Dodson	General Services Administration
Col. Joseph B. Warren	Department of Defense
Mr. M. Herbert Schwartz	Atomic Energy Commission
Mr. Kenneth Webster	National Aeronautics and Space Administration
Mr. George Clark	Chairman, FIPS Task Group 2
Mr. John L. Little	Chairman, FIPS Task Group 3
Miss Josephine Walkowicz	Chairman, FIPS Task Group 5
Mr. Philip S. Johnson	Chairman, FIPS Task Group 6
Mrs. Elizabeth Holberton	Chairman, FIPS Task Group 7
Mr. Charles Rowan (liaison member)	National Association of State Information Systems

5.1.3. Federal Information Processing Standards (FIPS) Task Groups

The role of FIPS Task Groups is explained in section 4.9 above. Task Groups are composed of technical personnel with a knowledge of each agency's requirements who assist the NBS in matters relating to the development, adoption, and implementation of standards and in providing better coordination of the Federal ADP standards program.

FIPS TASK GROUP 1*

OBJECTIVES AND REQUIREMENTS FOR STANDARDS

Scope:
Assist the National Bureau of Standards in translating the general objectives of Public Law 89–306 into specific objectives and requirements for uniform Federal Information Processing Standards (FIPS).

Work Program:
1. Development of the general objectives for the overall FIPS program.
2. Development of specific objectives (sub-objectives) needed to support the general objectives.
3. Identification of specific standards requirements and priorities in the areas of:— hardware, software, applications and data.

FIPS TASK GROUP 2

DATA TERMINALS AND DATA INTERCHANGE SYSTEM REQUIREMENTS

Scope:
Examine the function and logical requirements of general purpose data terminal devices for computers, data interchange systems, and their interface relationships with Federal Government telecommunications systems; and recommend to NBS standardization guidance including implementation of these standards.

Work Program:
1. Examine the existing FIPS and develop and provide to NBS the minimum requirements of data terminals and data communication systems for conformance with these FIPS.
2. Develop the common functional and logical requirements of general purpose data terminals and data communications systems, including:
   (a) the data interchange requirements and
   (b) equipment-to-system interface requirements (equipment interchange).
3. Review the existing and proposed standards (ANSI, Mil. Stds., FIPS) related to data terminals and communications systems and identify any FIPS requirements for additional standards or modification(s) to existing standards.—

* Work of FIPS Task Group 1 has been completed.

4. Recommend to NBS the establishment of those standards activities as may be required to effectively insure data interchange among Federal telecommunications systems, data terminals and data processing systems; and provide with these recommendations (a) the benefits to be derived and (b) the technical feasibility.

5. Recommend to NBS an implementation schedule for existing FIPS and standardization guidance related to any additional stated requirements.

Chairman: Mr. George E. Clark
Office of Information Processing Standards
National Bureau of Standards
Washington, D.C. 20234
(301) 921–3545

Federal Participants	Department and/or Agency
Mr. George E. Clark	Department of Commerce, NBS
Mr. Arthur R. Cooke	Office of Telecommunications Policy
Mr. Richard A. Day, Jr.	Department of Defense, NSA
Mr. G. Stanley Doore	Department of Commerce, ESSA
Mr. William Douglas	Department of Defense, NSA
Mr. William E. Hahn	National Aeronautics and Space Administration
Mr. Arthur Hopkins	Department of the Interior
Mr. George Hopping	General Services Administration
Mr. William Huf	Department of Defense, Navy
Miss Anne Marie Lamb	Office of Management and Budget
Mr. Richard W. Lee	National Science Foundation
Mr. Albert N. McMahan	Department of Defense, USAF
Mr. Robert L. Mills	Department of Commerce, Census
Mr. Raymond T. Moore	Department of Commerce, NBS
Mr. Joseph Naughton	Department of Health, Education and Welfare
Mr. William Newbold	Veterans Administration
Mr. Gerald C. Schutz	Department of Transportation, OST
Mr. Thomas Shimabukuro	Department of Defense, DCA
Mr. Delbert Shoemaker	General Services Administration
Mr. Paul D. Simpson	General Services Administration
Mr. Edward L. Snider	Department of Defense, Navy
Mr. W. Speary	Department of Health, Education and Welfare, NIH
Mr. George White	Office of Telecommunications Policy, NCS

FIPS TASK GROUP 3

CHARACTER SUBSETS, SIGN CONVENTIONS, AND PACKING TECHNIQUES

Scope:
Develop recommendations to the National Bureau of Standards on character subsets of the Federal Standard Code for Information Interchange (FIPS 1) (Same as ASCII, AN Standard X3.4–1967), sign conventions and field formatting for data input-output and processing, and packing conventions for numeric data.

Chairman: Mr. John L. Little
Office of Information Processing Standards
National Bureau of Standards
Washington, D.C. 20234
301–921–3551

Federal Participants	Department and/or Agency
Mr. Rodney Brown	Department of the Interior
Mr. Robert G. Cox	Department of Health, Education and Welfare
Mr. G. Stanley Doore	Department of Commerce, ESSA
Mr. Herman E. Fey	Department of Health, Education and Welfare, SSA
Mr. Calvin Fleming	Department of Defense, NSA
Mr. Leroy Hartswick	Veterans Administration
Mr. Richard W. Lee	National Science Foundation
Mr. John L. Little	Department of Commerce, NBS
Mr. Henry McDonough	Department of Defense, NSA
Mr. Walter Magee	Office of Management and Budget
Mr. Robert L. Mills	Department of Commerce, Census
Mr. Joseph D. Naughton	Department of Health, Education and Welfare, NIH
Mr. Volney Taylor	Department of the Treasury
Mr. Bruce F. Wellborn	General Services Administration
Mr. George W. White	National Communications System

FIPS TASK GROUP 4*

SUBSECTIONS ON STANDARDS FOR USE IN REQUESTS FOR PROPOSALS

Scope:
To develop instructions to provide uniform phraseology to be used in Requests for Proposals and Invitations for Bids for use by agencies when effecting procurements falling within the scope of the approved standards (FIPS 1, 2, and 3) and implementing instructions (FIPS PUB 7).

* Work of FIPS Task Group 4 has been completed.

FIPS TASK GROUP 5

FEDERAL INFORMATION PROCESSING VOCABULARY

Scope:

1. Develop scope, guidelines, applicability, etc., for a proposed Federal Vocabulary for Information Processing.
2. Develop recommendations for terms and definitions not now in ANSI X3.12–1970, "USA Standard Vocabulary for Information Processing".
   A. Priority of terms
      1. Federal agencies' proposals which were deferred by NBS for consideration in the next edition of ANSI X3.12–1970.
      2. those for which there is a government-wide need but not now included in X3.12–1970, or defined differently in X3.12–1970. The task group will catalog existing officially published definitions, rather than create new definitions therefor.
3. Develop procedures for submission and maintenance of candidate terms to X3.5 for inclusion in the ANSI Dictionary.
4. Develop a long-range plan for continuing review and revision of the Federal Vocabulary by successor to Task Group 5.

Chairman: Miss Josephine L. Walkowicz
Office of Computer Information
National Bureau of Standards
Washington, D.C. 20234
301–921–3517

Federal Participants	Department and/or Agency
Mrs. Edna Anderson	Department of Defense, USMC
Mr. Norman Booth	General Services Administration
Mr. Reginal Creighton	Smithsonian Institution
Mr. Norman B. Cyr	Department of Defense, Navy
Mr. A. R. Demarest	US Civil Service Commission
Mr. Jules B. DuPeza	Department of Transportation
Mr. Andrew Dziekan	General Services Administration
Mr. James O. Emerson	Central Intelligence Agency, JIIHC
Mrs. Marguerite K. Gray	Tennessee Valley Authority
Mr. Daniel A. Lahn	Department of Health, Education and Welfare
Mr. Robert L. Mayer	Atomic Energy Commission
Mr. William H. Newbold	Veterans Administration
Dr. A. W. Pratt	Department of Health, Education and Welfare, NIH (Representing the Office of Science and Technology)
Mr. Sherwood Prescott	Department of Defense, USMC
Mrs. Sharon Schatz	Library of Congress
Miss Mary K. Stevens	Department of Commerce, NBS
Miss Josephine L. Walkowicz	Department of Commerce, NBS
Mr. Martin H. Weik	Department of Defense, Army
Mr. George White	National Communications System
Mr. J. Howard Wright	National Aeronautics and Space Administration

FIPS TASK GROUP 6

COMPUTER MAGNETIC TAPES

Scope:

1. Identify the problems involved in exchanging recorded magnetic tapes among Government ADP installations.
2. Propose requirements for reference tapes and/or calibration services to assist in solving such problems.
3. Develop and recommend to FIPSCAC draft Federal magnetic tape standards for information interchange, based on the proposed ANSI magnetic tape standards, modified if necessary. Develop draft FIPS PUB to accompany the standard(s).

Work Program:

1. Identify those magnetic tape interchange problems related to the use of a) different makes and models of tape handling equipment and b) different types of manufacturers' magnetic tapes.
2. Determine the extent to which such problems contribute to the difficulties in exchanging recorded magnetic tapes.
3. Review the proposed ANSI magnetic tape standards and adapt them for Federal use. This may include the statement of additional performance requirements and criteria for acceptable interchange tape and related equipments. It may also involve the specification of performance test and measurement techniques for these FIPS.
4. Develop a draft FIPS PUB(s) announcing the adoption of these standards and specify the conditions for their use.

Chairman: Mr. Philip S. Johnson
Office of Information Processing Standards
National Bureau of Standards
Washington, D.C. 20234
301–921–3547

Federal Participants	Department and/or Agency
Mr. A. J. Burkhart	General Services Administration

Mr. Virgil Byrd	National Aeronautics and Space Administration
Mr. Stephen Caine	Department of Defense, Navy
Mr. Roger Daniero	General Services Administration
Mr. John H. Eastman	General Services Administration
Mr. Art Ernst	Department of Commerce, NBS
Mr. Julius Fiori	General Services Administration
Mr. Gerald Gustafson	Department of Defense, Navy
Mr. Philip S. Johnson	Department of Commerce, NBS
Mr. Inman McElvy	Department of Defense, NSA
Mr. Paul Mantek	Department of Commerce, NBS
Mr. William H. Newbold	Veterans Administration
Mr. L. S. Waters	Department of Agriculture
Mr. George W. White	National Communications System

FIPS TASK GROUP 7

MAGNETIC TAPE LABELS FOR INFORMATION INTERCHANGE

Scope:
To develop a draft FIPS PUB covering a proposed Federal Standard for Magnetic Tape Labels for Information Interchange.

Work Program:
1. Review the proposed American National Standard for Magnetic Tape Labels for Information Interchange (ANSI document X3.2/759 [X3.2.5/128 revision of X3.2/513 of July 18, 1968]).
2. Identify those elements of the proposed American National Standard for Magnetic Tape Labels together with the minimum systems processing requirements necessary to permit the interchange of information recorded on magnetic tape among Federal agencies.
3. Determine the extent to which options to be agreed upon by the exchanging parties should be provided for in the proposed Federal standard.
4. Determine the minimum extent of paper (humanly readable) documentation (excluding the file data documentation) which must accompany magnetic tapes being interchanged (e.g. type of recording, density, blocking, code, etc.).
5. Determine the conditions under which the proposed Federal standard should be applicable in Federal use.

Chairman: Mrs. Frances E. Holberton
Office of Information Processing Standards
National Bureau of Standards
Washington, D.C. 20234
301–921–3551

Federal Participants	Department and/or Agency
Mr. Herman E. Fey	Dept. of Health, Education and Welfare, SSA
Mr. John Halterman	Department of Commerce, Census
Mrs. Frances E. Holberton	Department of Commerce, NBS
Mr. Herbert L. Peress	Library of Congress
Mr. Sherwood Prescott	Department of Defense, USMC
Mr. Robert D. Rice	Department of Defense, Navy
Mr. Gerald Rosenkrantz	General Services Administration, NARS
Mr. George White	National Communications System

5.1.4. Agency Points of Contact for Federal Information Processing Standards, other than Data Elements and Codes (FIPS Contacts)

At the request of the National Bureau of Standards, the following offices have been designated by Federal Departments and Agencies as central points of contact for matters concerning Federal Information Processing Standards (other than data elements and codes). In some cases these offices are also the points of contact for BOB Circular A–86.

Executive Director
Administrative Conference of the United States
726 Jackson Place, NW
Washington, D. C. 20506
ATTN: Mr. John F. Cushman
IDS–103–3753
202–395–3754

Chief of the Division of Procedural Studies and Statistics
Administrative Office of the U.S. Courts
Supreme Court Building
Washington, D. C. 20544
ATTN: Mr. Norbert A. Halloran
IDS–1207–384
202–393–1640, Ext. 384

Special Assistant to the Director
Office of Data Systems
Room 725, SA–12
Agency for International Development
Washington, D. C. 20523
ATTN: Mrs. Judith P. Alejos
IDS–101–23962
202–737–3962

American Battle Monuments Commission
2067 Tempo A
Washington, D. C. 20315
ATTN: not designated
IDS–11–36067
202–693–6067

Appalachian Regional Commission
1666 Connecticut Avenue, NW
Washington, D. C. 20235
ATTN: not designated
202–967–3237

Plans, Training and Standards Branch
Office of the Controller
Atomic Energy Commission
Washington, D. C. 20545
ATTN: Mr. Richard G. Shook
IDS–119–3191
301–973–3191

Canal Zone Government
312 Pennsylvania Building
Washington, D. C. 20004
ATTN: not designated
202-382-6453

Chairman, Information Processing Board
O/PPB
CIA
Washington, D. C. 20505
ATTN: Mr. Charles A. Briggs
IDS-143-4456
202-351-4456

Bureau of Accounts and Statistics
Civil Aeronautics Board
Washington, D. C. 20428
ATTN: Mr. Allan Craig
IDS-128-7661
202-382-7661

Director of the Office of Management
United States Commission on Civil Rights
1405 Eye Street, NW
Washington, D. C. 20425
ATTN: Mr. Bert Silver
IDS-128-3411
202-382-3411

Commission on Obscenity and Pornography
1016—16th Street, NW
Washington, D. C. 20036
ATTN: not designated
202-393-2035

Council of Economic Advisors
Executive Office Building
Washington, D. C. 20506
ATTN: not designated
202-395-3000

Office of the United States Commissioner
Delaware River Basin Commission
Room 5625, Interior Building
Washington, D. C. 20240
ATTN: Mrs. Barbara J. Shipler
202-343-5761

Office of Management Improvement
U.S. Department of Agriculture
14th & Independence Avenue, S.W.
Washington, D. C. 20250
ATTN: Mr. Edward M. McCormick
IDS-111-7243
202-388-7243

Department of Commerce
Office of Management and Organization
Room 5327, Main Commerce
14th and Constitution Avenues, NW
Washington, D. C. 20230
ATTN: Mr. William F. Rapp
IDS-189-3707
202-967-3707

Deputy Comptroller for Data Automation
Office of the Assistant Secretary of Defense, (Comptroller)
Washington, D. C. 20301
ATTN: Col. Joseph B. Warren
IDS-11-53147
202-695-3147

Acting Deputy Assistant Secretary for Management Systems
Office of Management Systems, OS-OA
Room 4300, DHEW-North Building
Washington, D. C. 20201
ATTN: Mr. William R. Berry
IDS-13-24245
202-962-4245

Director
Office of ADP Systems Management and Operations—Room 4158
Dept. of Housing and Urban Development
451—7th Street, SW
Washington, D. C. 20410
ATTN: Mr. David B. Albright, Jr.
IDS-138-55306
202-755-5306

Office of Survey and Review
Department of the Interior
18th and C Streets, NW
Washington, D. C. 20240
ATTN: Mr. Rodney J. Brown or Thomas W. Martin
IDS-183-5745
202-343-5745

Office of Management Support
Department of Justice
615 Pennsylvania Avenue, NW
Washington, D. C. 20530
ATTN: Mr. Mark D. Biallas
IDS-187-3239
202-737-3239

Departmental Data Processing Center
U.S. Department of Labor
Office of the Assistant Secretary for Administration
400 First Street, NW—Room 301
Washington, D. C. 20212
ATTN: Mr. James W. Gray
IDS-187-4371
202-961-4371

Automated Data Processing Division
Department of State
Washington, D. C. 20520
ATTN: Mr. W. Wallace Francis
IDS-101-20879
202-632-0879

Information Systems Division
Department of Transportation
Office of the Secretary, TAD-25
Washington, D. C. 20590
ATTN: Mr. Harry H. Fite
IDS-13-64721
202-426-4721

Chief of the Fiscal Management Division
Room 4319, Main Treasury Building
Washington, D. C. 20220
ATTN: Mr. Nicholas F. Schauer
IDS-184-5751
202-964-5751

Office of Budget and Executive Management
Division of Systems Development and Computer Services
District of Columbia
509—7th Street, NW
Washington, D. C. 20004
ATTN: Mr. Joseph C. Chicherio
IDS-137-2893
202-268-2893

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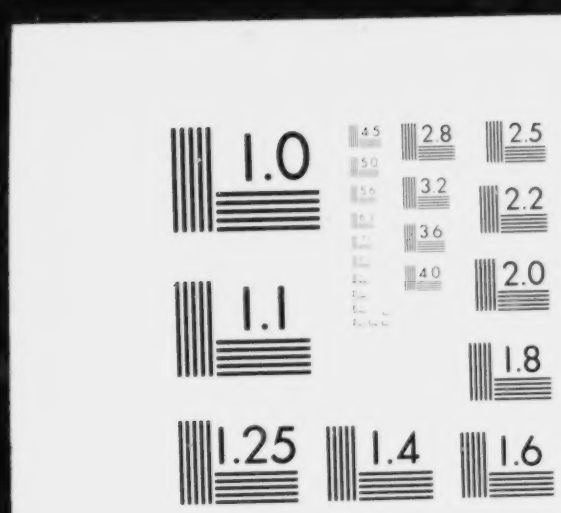

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Director, Office of Management and Evaluation
D. C. Redevelopment Land Agency
1325 G Street, NW
Washington, D. C. 20005
ATTN: Mr. D. C. Drohat
IDS–128–5567
202–382–5567

Division of Management and Organization
Office of Administration
Equal Employment Opportunity Commission
1800 G Street, NW
Washington, D. C. 20506
ATTN: Mr. Martin O. Alexander
IDS–183–6198
202–343–6198

ADP Section
Export-Import Bank of the U.S.
811 Vermont Avenue, NW
Washington, D. C. 20571
ATTN: Mr. Joseph Magyar
IDS–128–21707
202–382–1707

Assistant to the Governor for Systems Management
Farm Credit Administration
Washington, D. C. 20578
ATTN: Mr. Paul C. Redmer
IDS–111–2785
202–388–2785

Federal Coal Mine Safety Board of Review
1875 Connecticut Avenue, NW
Washington, D. C. 20452
ATTN: not designated
IDS–128–5005
202–382–5005

Data Processing Division
Federal Communications Commission
1919 M Street, NW
Washington, D. C. 20554
ATTN: Mr. J. N. Hand
IDS–101–27115
202–632–7115

Standards and Quality Control
Federal Deposit Insurance Corporation
550—17th Street—Room 2129
Washington, D. C. 20429
ATTN: Mr. Paul Spishak
IDS–1236–274
202–389–4274

Division of Office Services
Federal Maritime Commission
1405 I Street, NW
Washington, D. C. 20573
ATTN: Mr. John C. Woodburn
IDS–128–3504
202–783–3504

Procedures and Methods Division
Room 1222
Department of Labor Building
Federal Mediation and Conciliation Service
Washington, D. C. 20427
ATTN: Mr. Jack R. George
IDS–110–3561
202–961–3561

Computer Systems Branch
Federal Power Commission
Room 4743A
141 G Street, NW
Washington, D. C. 20426
ATTN: Mr. Richard A. Kear
IDS–129–3260
202–386–3260

Special Assistant
Room 8222 FOB #7
Federal Radiation Council
Washington, D. C. 20449
ATTN: Mr. Claire C. Palmiter
IDS–128–22505
202–382–2505

Board of Governors of the Federal Reserve System
20th Street and Constitution Avenue, NW
Washington, D. C. 20551
ATTN: not designated
IDS–147–1100
202–737–1100

Federal Trade Commission
Pennsylvania Avenue at Sixth Street, NW
Washington, D. C. 20580
ATTN: not designated
IDS–1262–800
202–393–6800

Foreign Claims Settlement Commission of the United States
1111 20th Street, NW
Washington, D. C. 20579
ATTN: not designated
IDS–128–7700
202–382–7700

Deputy Director for ADP
Room 6106, GAO Building
General Accounting Office
441 G Street, NW
Washington, D. C. 20548
ATTN: Mr. Edward J. Mahoney
IDS–129–3911
202–386–3911

General Services Administration
Federal Supply Service
Automated Data Management Services (FT)
Washington, D. C. 20406
ATTN: Mr. George W. Dodson, Jr.
IDS–16–78655
202–557–8655

Comptroller
Government Printing Office
Washington, D. C. 20401
ATTN: Mr. Walter C. DeVaughn
IDS–149–581
202–541–3581

Indian Claims Commission
1730 K Street, NW
Washington, D. C. 20006
ATTN: not designated
202–382–6433

Section of Systems Development
Interstate Commerce Commission
Washington, D. C. 20423
ATTN: Mr. Robert J. Hartel
IDS–156–481
202–737–9765, Ext. 481

Coordinator of Information Systems
Information Systems Office
Library of Congress
Washington, D. C. 20540
ATTN· Mr. Paul C. Reimers
IDS–182–5114
202–426–5114

National Aeronautics and Space Council
New Executive Office Building
Washington, D. C. 20502
ATTN: not designated
202–395–3300

Office of Tracking and Data Acquisition
Headquarters
National Aeronautics and Space Administration
Washington, D. C. 20546
ATTN: Dr. Thomas O. Paine
202–963–7101

National Capital Housing Authority
1170 Twelfth Street, NW
Washington, D. C. 20430
ATTN: not designated
202–393–3111

National Capital Planning Commission
726 Jackson Place, NW
Washington, D. C. 20576
ATTN: not designated
202–382–1161

Executive Director
National Commission on Product Safety
1016—16th Street, NW
Washington, D. C. 20036
ATTN: Mr. William V. White
202–382–6344

National Committee on Reform of Federal Criminal Laws
531 Vanguard Building
1111 20th Street, NW
Washington, D.C. 20036
ATTN: not designated
202–382–2011

National Communications System
Washington, D. C. 20305
ATTN: not designated

National Council on Indian Opportunity
726 Jackson Place, NW
Washington, D. C. 20506
ATTN: not designated
202–395–3412

Executive Office of the President
National Council on Marine Resources and Engineering Development
Washington, D. C. 20500
ATTN: Dr. Edwin B. Shykind
IDS–103–4626
202–395–4626

National Foundation on the Arts and the Humanities
1800 G Street, NW
Washington, D. C. 20506
ATTN: not designated
202–382–7504

National Labor Relations Board
1717 Pennsylvania Avenue, NW
Washington, D. C. 20570
ATTN: not designated
202–393–3111

Executive Secretary
National Mediation Board
Washington, D. C. 20572
ATTN: Mr. Thomas A. Tracy
IDS–183–38771
202–343–8781

National Science Foundation
1800 G Street, NW
Washington, D. C. 20550
ATTN: not designated
202–655–4000

National Security Council
Executive Office Building
Washington, D. C. 20506
ATTN: not designated
202–395–3000

National Selective Service Appeal Board
Room 509
1724 F Street, NW
Washington, D. C. 20435
ATTN: not designated
202–343–1100

Administrative Office
National Water Commission
800 North Quincy Street, Room 411
Arlington, Va. 22203
ATTN: Mr. Robert N. Baker
IDS–167–1964
703–557–1964

Chief, Data Processing Branch
Information Services Division
Office of Economic Opportunity
7981 Eastern Avenue
Silver Spring, Md. 20910
IDS–179–3232
301–495–3232

Office of Emergency Preparedness
Executive Office Building Annex
Washington, D. C. 20504
ATTN: not designated
202–395–3000

Office of Intergovernmental Relations
Executive Office Building
Washington, D. C. 20510
202–395–3482

Office of Management and Budget
Executive Office Building
Washington, D. C. 20503
ATTN: not designated
202–395–3000

Technical Assistant for Scientific and Technical Information
Executive Office of the President
Office of Science and Technology
Washington, D. C. 20506
ATTN: Col. Andrew A. Aines
IDS–103–3547
202–393–3547

Office of the Special Representative for Trade Negotiations
1800 G Street, NW
Washington, D. C. 20506
ATTN: not designated
202–395–5114

Panama Canal Company
312 Pennsylvania Building
Washington, D. C. 20004
ATTN: not designated
202–382–6453

Peace Corps
806 Connecticut Avenue, NW
Washington, D. C. 20525
ATTN: not designated
202–382–2074

Office of ADP Management
Bureau of Finance and Administration
Room 6353
Post Office Department
Washington, D. C. 20260
ATTN: Mr. Burnett G. Anderson
IDS–177–8281
202–961–8281

Office of Management Control
Railroad Retirement Board
844 Rush Street
Chicago, Ill. 60611
ATTN: Mr. Hubert P. Gibbons
312–944–5291

Office of Administration
The Renegotiation Board
1910 K Street, NW
Washington, D. C. 20446
ATTN: Mr. Harold E. Stone
IDS–128–7037
202–382–7037

Office of Data Processing—Room 257
U.S. Securities and Exchange Commission
500 North Capitol Street, NW
Washington, D. C. 20549
ATTN: Mr. Ralph L. Bell
IDS–138–1152
202–755–1152

Management Information and Statistics Branch
National Headquarters
Selective Service System
1724 F Street, NW
Washington, D. C. 20435
ATTN: Mr. J. E. Haines
IDS–183–7131
202–343–7131

Office of Data Management
Small Business Administration
1441 L Street, NW—Room 118
Washington, D. C. 20416
ATTN: Mr. Fred S. Williams
IDS–128–3321
202–382–3321

Information Systems Division
Room 1315, A & I Building
Smithsonian Institution
Washington, D. C. 20560
ATTN: Mr. Stanley A. Kovy
IDS–144–5417
202–381–5417

Executive Secretary
Subversive Activities Control Board
427 Lafayette Building
811 Vermont Avenue, NW
Washington, D. C. 20445
ATTN: Mr. Francis J. McNamara
IDS–128–6224
202–393–6224

Tax Court of the United States
Administrative Office of the Court
1111 Constitution Avenue NW
Washington, D. C. 20044
ATTN: not designated
202–964–3018

Computing Center
Tennessee Valley Authority
Chattanooga, Tenn. 37401
ATTN: Mr. Martin O. Hochdorf
615–755–2968

Reference Information Center
U.S. Arms Control and Disarmament Agency
Room 5720, Department of State Building
Washington, D. C. 20451
ATTN: Mr. Robert Whipp
IDS–101–28666
202–632–8666

Bureau of Manpower Information Systems
U.S. Civil Service Commission
1900 E Street, NW—Room 6425
Washington, D. C. 20415
ATTN: Mr. Victor J. Cavagrotti
IDS–101–26814
202–632–6814

Systems and Planning Staff
Finance and Data Management Division
U.S. Information Agency
Room 823
1776 Pennsylvania Avenue, NW
Washington, D. C. 20547
ATTN: Mr. Clayton P. Balzer
IDS–101–26603
202–632–6603

Support Division
U.S. Tariff Commission
8th and E Streets, NW
Washington, D. C. 20436
ATTN: Mr. Vincent A. Mariner
IDS–1272–172
202–628–2172

Research Service (36)
Department of Data Management
Veterans Administration
Washington, D. C. 20420
ATTN: Mr. William H. Newbold
IDS–148–3738
202–389–3738

Administrative Officer
Water Resources Council
Suite 900
1025 Vermont Avenue
Washington, D. C. 20005
ATTN: Mr. Richard N. Vannoy
IDS–128–6104
202–382–6104

5.1.5. Agency Points of Contact for BOB Circular A–86

In accordance with paragraph 6.b.(8), BOB Circular A–86 (see Section 4.7 above), the following agency points of contact have been designated by Federal Departments and Agencies for matters relating to the standardization of data elements and codes in data systems:

Administrative Office of the U.S. Courts
Division of Procedural Studies and Statistics
Supreme Court Building
Washington, D. C. 20544
ATTN: Mr. Norbert Halloran
IDS–1207–381
202–393–1640, Ext. 381

Agency for International Development
Room 725, State Annex—12, Universal North Building
Washington, D. C. 20523
ATTN: Mrs. Judith Alejos
IDS–101–20126
202–632–0126

American Battle Monuments Commission
Room 2018—Munitions Building
Washington, D. C. 20360
ATTN: Administrator
IDS–11–63678
202–696–3678

Atomic Energy Commission—F–017
Plans, Training and Standards Branch
Washington, D. C. 20545
ATTN: Mr. Richard G. Shook
IDS–119–3191
301–973–3191

Canal Zone Government and Panama Canal Company
Data Processing Division
Office of the Comptroller
Balboa Heights, Canal Zone
ATTN: Mr. H. E. Turner
BALBOA 2–2149

Civil Aeronautics Board
Bureau of Accounts and Statistics
1825 Connecticut Avenue, NW
Washington, D. C. 20009
ATTN: Mr. Allan Craig
IDS–128–7661
202–382–7661

Department of Agriculture
OMI—Administration Building, Room 347–E
14th and Independence Avenues, SW
Washington, D. C. 20250
ATTN: Mr. Arthur T. Devlin
IDS–111–6275
202–388–6275

Department of Commerce
Office of Management and Organization
Room 5327, Main Commerce
14th and Constitution Avenues, NW
Washington, D. C. 20230
ATTN: Mr. William F. Rapp
IDS–189–3707
202–967–3707

National Bureau of Standards
Office of Information Processing Standards
Washington, D. C. 20234
ATTN: Mr. Harry S. White, Jr.
IDS–164–3551
301–921–3551

Department of Defense
Office of the Assistant Secretary of Defense (Comptroller)
Director for Data Standardization
Room 3A 918, Pentagon
Washington, D. C. 20301
ATTN: Mr. William B. Robertson
IDS–11–78630
202–697–8630

Department of Health, Education and Welfare
Office of the Secretary
Room 4300
Third and C Streets, SW
Washington, D. C. 20201
ATTN: Mr. Robert G. Cox
IDS–13–33597
202–963–3597

Department of Housing and Urban Development
Office of the Deputy Undersecretary
Room 10184
Seventh and D Streets, SW
Washington, D. C. 20411
ATTN: Mrs. Mary Oechsler
IDS–138–57080
202–755–7080

Department of the Interior
Office of the Secretary, ASR
Room 7112
18th and C Streets, NW
Washington, D. C. 20240
ATTN: Mr. Rodney Brown
IDS–183–2543
202–343–2543

Department of Justice
Administrative Division
Office of Management Support
615 Pennsylvania Avenue, NW
Washington, D. C. 20004
ATTN: Mr. Larry Shute
IDS–187–3274
202–737–8200, Ext. 3274

Department of Labor
Departmental Data Processing Center
Planning Staff
Washington, D. C. 20210
ATTN: Mr. Stanley Kimmel
IDS–110–4395
202–393–4395

Department of State
OM/SNS—Room 1890
2201 C Street, NW
Washington, D. C. 20520
ATTN: Mr. John Toller
IDS–101–23561
202–737–3561

Department of Transportation
Office of the Secretary
Information Systems Division (TAD–25)
400 Seventh Street, SW—Room 10313
Washington, D. C. 20591
ATTN: Mr. Robert E. Jones
IDS–118–64721
202–426–4721

Department of the Treasury
Office of Budget and Finance
Room 4219
15th and Pennsylvania Avenues, NW
Washington, D. C. 20220
ATTN: Mr. Nicholas Schauer
IDS–184–5751
202–964–5751

District of Columbia
Personnel Office—Room 203
509 Seventh Street, NW
Washington, D. C. 20001
ATTN: Mr. Edwin Pitts
202–628–3283

Equal Employment Opportunity Commission
Management and Organizational Division
Office of Administration
1800 G Street, NW—Room 1117
Washington, D. C. 20506
ATTN: Mr. Martin O. Alexander
IDS–183–6198
202–343–6198

Export-Import Bank of the United States
ADP Section
811 Vermont Avenue, NW
Washington, D. C. 20571
ATTN: Mr. Joseph Magyar
IDS–128–1707
202–382–1707

Farm Credit Administration
Office of the Assistant to the Governor for Systems Management
USDA Building, Room 5917
Washington, D. C. 20578
ATTN: Mr. Paul C. Redmer
IDS-111-2785
202-388-2785

Federal Communications Commission
Data Processing Division
1919 M Street, NW
Washington, D. C. 20554
ATTN: Mr. J. N. Hand
IDS-101-27115
202-632-7115

Federal Deposit Insurance Corporation
Division of Research
550—17th Street, NW
Washington, D. C. 20429
ATTN: Mr. Nicholas J. Suszynski, Jr.
IDS-1236-402
202-389-4402

Federal Home Loan Bank Board
Data Management Division
101 Indiana Avenue, NW
Washington, D. C. 20552
ATTN: Mr. Howard Nathanson
IDS-129-5317
202-386-5317

Federal Maritime Commission
Office of the Managing Director
1405 I Street, NW
Washington, D. C. 20573
ATTN: Mr. Andrew Drance
IDS-128-3496
202-382-3496

Federal Mediation and Conciliation Service
Procedures and Methods Division
14th and Constitution Avenue, NW
Washington, D. C. 20427
ATTN: Mr. Jack R. George
IDS-110-3561
202-393-3561

Federal Power Commission
Office of Finance and Management
GAO Building, Room 4043
441 G Street, NW
Washington, D. C. 20426
ATTN: Mr. Marsh H. Moy
IDS-129-3531
202-386-3531

Federal Reserve System
DDP Board of Governors
Room 1210
Constitution and 20th Street, NW
Washington, D. C. 20551
ATTN: Mr. Jerold E. Slocum
IDS-147-595
202-737-1100, Ext. 595

Federal Trade Commission
Office of Administration
Sixth and Pennsylvania Avenue, NW
Washington, D. C. 20580
ATTN: Mr. John A. Delaney
IDS-1262-85
202-393-6800, Ext. 85

Foreign Claims Settlement Commission
Vanguard Building, Room 417
1111—20th Street, NW
Washington, D. C. 20579
ATTN: Mr. Francis T. Masterson
IDS-128-3137
202-382-3137

General Accounting Office
Deputy Director for ADP—OPSS
Room 6106, GAO Building
Washington, D. C. 20548
ATTN: Mr. Edward J. Mahoney
IDS-129-3911
202-386-3911

General Services Administration
ADP Standards Division
GSA/FSS/OADMS
Washington, D. C. 20406
ATTN: Mr. Delbert Shoemaker
IDS-16-71613
703-557-1613

Government Printing Office
Comptroller
Washington, D. C. 20401
ATTN: Mr. Walter C. DeVaughn
IDS-149-581
202-541-3581

Interstate Commerce Commission
Office of the Managing Director
12th and Constitution Avenue, NW
Washington, D. C. 20423
ATTN: Mr. Martin E. Foley
IDS-156-434
202-737-9765, Ext. 434

National Aeronautics and Space Administration
Information Systems Division
Washington, D. C. 20546
ATTN: Mr. Wallace E. Velander
IDS-13-35281
202-963-5281

National Communications System
NCS-OCD
Washington, D. C. 20305
ATTN: Mr. Warren F. Spurr
IDS-11-44534
202-694-4534

National Foundation on the Arts and the Humanities
1800 G Street, NW
Washington, D. C. 20506
ATTN: Mr. Robert K. Johnson
IDS-128-3380
202-382-3380

National Labor Relations Board
Office of Organization and Methods
1717 Pennsylvania Avenue, NW—Room 413
Washington, D. C. 20570
ATTN: Mr. Lee Vincent
IDS-128-5627
202-393-5627

National Mediation Board
1230—16th Street, NW
Washington, D. C. 20572
ATTN: Mr. C. Robert Roadley
IDS-183-8781
202-343-8781

National Science Foundation
Office of Data Management Systems
1800 G Street, NW
Washington, D. C. 20550
ATTN: Mr. E. W. Barrett
IDS–101–25990
202–632–5990

National Security Council
Room 383—Executive Office Building
Washington, D. C. 20506
ATTN: Miss Lois G. Moock
IDS–103–4974
202–395–4974

Office of Economic Opportunity
Office of Administration Systems Division
1111—18th Street, NW
Washington, D. C. 20506
ATTN: Mr. Alan O. Mann
IDS–128–6186
202–254–6186

Office of Emergency Preparedness
Director of Administration
Executive Office Building Annex—Room 102
Washington, D. C. 20504
ATTN: Mr. William B. Rice
IDS–103–5706
202–395–5706

Office of Management and Budget
ADP Management Branch
Room 9235—New Executive Office Building
Washington, D. C. 20503
ATTN: Mr. Thornton J. Parker, III
IDS–103–4727
202–395–4727

Post Office Department
Reports and Records Management Division
12th and Pennsylvania Avenue, NW—Room 2319
Washington, D. C. 20260
ATTN: Mr. J. E. Finlay
IDS–177–8410
202–961–8410

Railroad Retirement Board
844 Rush Street
Chicago, Ill. 60611
ATTN: Mr. H. P. Gibbons
312–944–5500, Ext. 291

Renegotiation Board
Office of Administration
1910 K Street, NW
Washington, D.C. 20446
ATTN: Mr. Harold E. Stone
IDS–128–7037
202–382–7037

Securities and Exchange Commission
Office of Data Processing—Room 257
500 North Capitol Street
Washington, D. C. 20549
ATTN: Mr. Ralph L. Bell
IDS–138–51152
202–755–1152

Selective Service System
1724 F Street, NW
Washington, D. C. 20435
ATTN: Mr. Kenneth H. McGill
IDS–183–5989
202–343–5989

Small Business Administration
Office of Data Management
1441 L Street, NW
Washington, D. C. 20416
ATTN: Mr. Fred S. Williams
IDS–128–3321
202–382–3321

Smithsonian Institution
Information Systems Division
Washington, D. C. 20560
ATTN: Mr. Stanley Kovy
IDS–144–5417
202–381–5417

Tax Court of the United States
12th and Constitution Avenue, NW
Washington, D. C. 20224
ATTN: Mr. William F. Huffman
IDS–184–3018
202–628–3018

Tennessee Valley Authority
Computer Center
116 Old Post Office Building
Chattanooga, TN 37401
ATTN: Mr. Martin Hochdorf
615–755–2968

U.S. Arms Control and Disarmament Agency
Room 5720
320—21st Street, NW
Washington, D. C. 20451
ATTN: Mr. Robert F. Whipp
IDS–101–28666
202–632–8666

United States Civil Service Commission
FPMIS Design Staff
OISP, BMIS—Room 6H29
1900 E Street, NW
Washington, D. C. 20415
IDS–101–25610
202–632–5610

United States Information Agency
Systems and Planning Staff
1750 Pennsylvania Avenue, NW
Washington, D. C. 20547
ATTN: Mr. Clayton P. Balzer
IDS–101–26603
202–632–6603

United States Tariff Commission
Technical Service
Seventh and E Streets, NW
Washington, D. C. 20436
ATTN: Mr. Vincent A. Mariner
IDS–1272–172
202–628–2172

Veterans Administration
DDM—Research Service
Washington, D. C. 20420
IDS–148–3739
202–389–3739

5.2. American National Standards Institute

The development of standards is an activity on which the national economy depends. To industry, standardization provides dollar savings through mass production, production of uniform goods, and reduction of time and materials through standard designs, equipment, procedures, and testing. To the purchasing agent, standards offer increased efficiency by freeing him from preparing individual sketches, descriptions, and specifications for each purchase. The distributor benefits from having to stock fewer varieties and sizes of commodities and from simplified inventories. Every branch of industry and commerce recognizes that standards promote fair trade by providing a common language between buyer and seller and a basis for evaluating competitive vendors.[1]

The above statements are directed at standards in general, but are most pertinent to computers and information processing. As the computer industry grows to maturity, standardization is becoming a more essential factor. Early emphasis during the growth of the industry was in getting each component of a system to work. Now that this has been attained, entire systems must be made to work together. For this, standards must be considered in the initial design of data systems, rather than after they are built.

Today the industry is paying for its earlier neglect of standards by expending untold resources (time, money, and manpower) to build a multitude of black boxes (hardware and software) to provide the interfaces between systems and components. An estimated 25 percent of the present computer power is used to provide systems compatibility. In fact, entire new industries have been established to provide conversion services. Because this situation had reached such tremendous proportions, a committee was formed in 1960 to address this national problem under the auspices of the now American National Standards Institute (formerly the American Standards Association and, from 1966 to 1969, the United States of America Standards Institute). This committee, which was named the USA Standards Committee for Computers and Information Processing with the committee designation X3, was given the task of standardization related to systems, computers, equipments, devices and media for information processing systems.

The Federal Government is a major contributor to the work of the American National Standards Institute (ANSI). The Director of the National Bureau of Standards is a member of its Board of Directors. Representatives from various Government departments and agencies participate through the many ANSI councils, boards, committees, subcommittes, and task groups.

Soon after the NBS Center for Computer Sciences and Technology was formed in 1965 and given the responsibility for Federal standardization in this area, the Bureau of the Budget provided policy direction by stating that NBS would participate on and cooperate in the development of national voluntary standards to the extent that such activities were beneficial to the Federal Government. Also, NBS was given the responsibility of monitoring the participation of Government representatives on the different ANSI standardization groups to ensure that the interests of the entire Federal establishment were presented and protected in the field of information processing. The NBS Office of Information Processing Standards was established within the Center to handle this task.

In developing standards for use in the Federal Government that provide economic and effective use of computers and related systems, major emphasis is given to the development and adoption of national voluntary standards that also meet the needs of Federal activities. Developing separate Federal standards would be much faster and simpler than spending months or, in some cases, years in contributing to the development of national voluntary standards. However, separate and different Federal standards eventually cost the Government more in that they lead to tailor-made or customized equipment and services of use only to Government. Not only must the Government guard its interests, but it must also be aware of the industry's need for standards and the role of standardization in promoting international trade and commerce. (The international aspect of computer standardization was the subject of a recent article in FIPS Notes, NBS Technical News Bulletin, February 1970.)

Because of the Government's concern with ANSI's role in standardization, some basic information about ANSI is pertinent.

ANSI is the national clearinghouse and coordinating agency for voluntary standards in the United States. It is a nonprofit (membership) organization incorporated under the laws of the State of New York and is located at 1430 Broadway in New York City. It is a federation of approximately 140 trade associations and professional societies, and over 750 companies, which are dues paying members. Donald L. Peyton is the Managing Director of the Institute.

ANSI was originally organized as the American Engineering Standards Committee (AESC) in 1918 by five engineering societies: American Institute of Electrical Engineers, American Society of Mechanical Engineers, American Society of Civil Engineers, American Society of Mining and Metallurgical Engineers, and American Society for Testing Materials. The AESC's initial purpose was to provide means for coordinating the standards issued by its founders, eliminating confusion and duplication among those standards. Its first act was to invite three Federal Government departments to join and work with the founding societies; the War Department, the Navy Department, and the Department of Commerce accepted the invitation. Enlarged in 1920 by the addition of trade associations, as well as more technical and professional societies, the AESC in 1928 was reorganized as the American Standards Association (ASA) to provide a more workable structure. The principles and procedures that were developed by the founders basically applied to the work of the American Standards Association through 1966, when ASA became the United States of America Standards Institute (USASI). In 1969, the present name, American National Standards Institute, was adopted.

As the national clearinghouse for standards, ANSI provides the machinery for developing and approving standards that are supported by a national consensus. Its constitution states: "In standardization practice a concensus is achieved when substantial agreement is reached by concerned interests according to the judgment of a duly appointed authority. Consensus implies much more than the concept of a simple majority, but not necessarily unanimity."

Technical societies, trade associations, consumer groups, and the like make up the Member Bodies of ANSI. Other classes of members are Company Members, Sustaining Members (individuals or organizations not otherwise eligible for membership but interested in standards development), and Honorary Members. Three councils make up the operating arms of ANSI—the Member Body Council, the Company Member Council, and the Consumer Council. Each council may establish such boards and committees as are considered necessary to accomplish its program. The Member Body Council is responsible for approving standards, and develops and maintains all procedures relating to the preparation, approval, acceptance, and designation of standards, and the constitution of standards boards and committees. The Company Member Council develops programs to maintain liaison with, and represent the interests of, commerce and industry in ANSI's work. The Consumer Council is responsible for the representation and protection of consumer interest in ANSI's work. The Consumer Council is also concerned with the application of ANSI's procedures for certifying and labeling consumer goods. Both the Company Member Council and the Consumer Council may recommend standards projects to be developed.

The Board of Directors is ANSI's governing body. It may delegate any part of its authority over the conduct of ANSI's affairs. Of the 45 members of the Board, 16 are drawn from the Member Body Council, 12 are nominated by the Company Member Council, four are nominated by the Consumer Council, and four are directors-at-large nominated by the Board of Directors. In addition, the president, the three vice presidents, the Director of the National Bureau of Standards, if willing to serve (ex officio, with vote), the chairman of the three councils, and the past president of ANSI are members of the Board.

Over 2800 American National Standards have been published. Of these, more than one-third were submitted by competent organizations that had developed standards through their own procedures, and supplied evidence of consensus in support of such standards. The balance resulted from the work of sectional committees.

ANSI is the United States Member Body of the International Organization of Standardization (ISO). The United States' viewpoints to be presented in the technical work of the ISO may be developed through the interested ANSI sectional committee, through a competent committee of another standards organization, or through a committee specifically organized as an Advisory Committee to an ISO Technical Committee. The work of the Tech-

nical Committees eventually results in ISO Recommendations that may be embodied in the national standards of the ISO Member Bodies. A number of ISO Recommendations have been embodied in American National Standards. For international standardization in the electrical field, ANSI provides services to the United States National Committee of the International Electrotechnical Commission (IEC). The IEC, an autonomous (non-governmental) organization formed in 1904, serves as the electrical branch of the ISO and devotes its activities solely to the electrical field.

Financial support for ANSI comes from dues paid by Company Members, Member Bodies, and Sustaining Members. An additional source of income comes from the sale of American National Standards. In addition to the annual catalog of American National Standards, ANSI publishes quarterly the *Magazine of Standards,* which is devoted to the discussion of principles, practice, and application of standardization, as well as news of ANSI and international standards activities.

Annually, ANSI holds a National Conference on Standards that includes presentation of standards problems at the international, national, industry, and company level. The proceedings of these conferences are published and are available to the public.

To provide direct supervision of the hundreds of ANSI technical activities, there exists within ANSI a number of standards boards, each responsible for several efforts in a particular area of standardization. One such board is the Information Processing Systems Standards Board (IPSSB). ANSI Committee X3, along with the standards committees for Office Machines, Vocabulary for Automatic Control, and Library Sciences and Documentation, report to IPSSB. The IPSSB is responsible for all aspects of standardization of systems that transmit, store, or process analog symbolic or encoded representations of information, including satellite or control systems, peripheral equipment, and auxiliary devices that significantly influence the effective utilization of composite information processing systems. Dr. H.R.J. Grosch of the NBS Center for Computer Sciences and Technology, George W. Dodson, Assistant Commissioner for Automated Data Management Services, General Services Administration, and Robert A. Raup and Wharton A. McGreer of the Directorate for Data Automation, Office of the Assistant Secretary of Defense (Comptroller), OSD are Government members of the IPSSB.

5.2.1. Ansi Standards Committee X3

Committee X3 is sponsored by the Business Equipment Manufacturers Association (BEMA). As sponsor, BEMA acts as the secretariat, provides essential administrative support, and is responsible to ANSI for the general administration of X3.

With the express purpose of accelerating and simplifying the processing of EDP standards, the X3 Systems Advisory Committee (SAC) proposed in 1968 that X3 be reorganized. This recommendation was made after thoroughly studying more than six years of X3 operations. Under the SAC proposal the X3 subcommittees would be realined and their responsibilities absorbed by: (a) Standards Planning and Requirements Committee (SPARC), (b) Standards Steering Committee (SSC), (c) three Group Directors for Hardware, Software, and Systems Groups, and (d) eight Section Managers for related Working Groups. It was SAC's contention that eliminating an intermediate phase of voting at the technical level would accelerate the standards process.

Committee X3 approved the SAC proposal in principle and recommended as a first step the formation of the SPARC and SSC Committees and the dissolution of the Systems Advisory Committee.

BEMA accepted the reorganization plan in principle, but did not agree to the immediate dissolution of the subcommittees. Instead, BEMA proposed that the reorganization be accomplished in two phases—setting up SPARC and SSC (and dissolving SAC) as the first phase, and realining the subcommittees only after the two new committees were functioning. It was BEMA's view that the formation of the Groups and the appointment of Group Directors and Section Managers required careful timing to minimize adverse effects on the ongoing standards development work.

SPARC and SSC were formed and began functioning in the first half of 1969. At the October 1969 meeting of X3 a resolution was approved that proposed a letter ballot on the dissolution of subcommittee X3.4, but the resolution provided that such letter ballot would not be necessary if BEMA would now agree to move ahead with the second phase of the reorganization. Later in October 1969, BEMA agreed.

Consequently, a letter was sent in November 1969 to all X3.4 subcommittee members notifying them of the dissolution of the subcommittee. The letter invited their participation in task groups (technical committees) that would report directly to either SPARC or SSC.

In similar fashion, each of the remaining eight subcommittees will also be realined as rapidly as a smooth and nondisruptive transfer of the subcommittee functions can be achieved. Figure 1 shows the structure of X3 after the reorganization is completed.

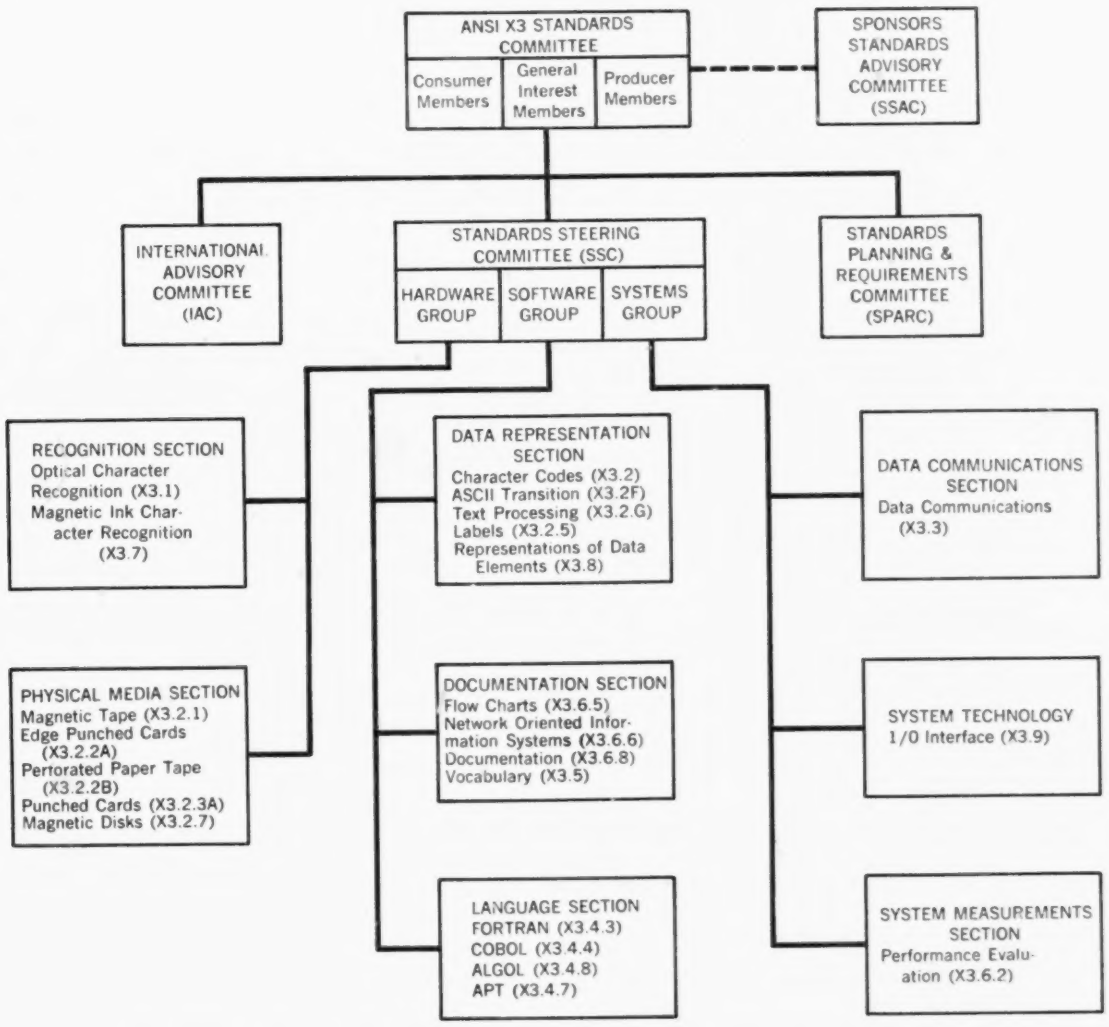

FIGURE 1. *ANSI X3 Standards Committee Reorganization (Phase 2). Implementation begun October 1969.*

It is important to recognize that ANSI procedures provide that all members of technical committees (all groups below the X3 level in this case) serve as technically qualified *individuals*. At the X3 level, members represent associations, professional societies, government agencies, companies, or other bodies having an interest in standards. ANSI procedures further provide that at the standards committee level (X3 in this case), the member bodies are to be categorized as *consumers, producers,* or *general interest* members and that no category shall have a majority of votes. It will be noted by reference to the list of present X3 Member Bodies (table 1) that a balance exists between the categories with no category having a simple majority. The reorganization of X3 will have no effect on this balance or the X3 membership.

Government agencies represented on X3 are NBS, the General Services Administration (GSA), and the Department of Defense (DOD). Joseph O. Harrison, Jr., and Harry S. White, Jr., of the NBS Office of Information Processing Standards participate as the principal and alternate NBS members to X3. Delbert Shoemaker of the ADP Standards Division, Office of Automated Data Management Services, is principal member from GSA, while Jay E. Rice of the GSA Technical Development Division is the alternate member. Robert A. Raup of the Directorate for Data Automation in the Office of the Assistant Secretary of Defense (Comptroller) represents DOD. Wharton A. McGreer is also alternate member

TABLE 1. *Member Body Representation ANSI X3 Standards Committee as of October 1969*

CONSUMER MEMBERS

Air Transport Association
American Bankers Association
American Gas Association
American Library Association
American News Paper Publishers Association
Association of American Railroads
Department of Defense
Edison Electric Institute
General Services Administration
Insurance Accounting & Statistical Association
Life Office Management Association
National Machine Tool Builders Association
National Retail Merchants Association
Printing Industries of America Inc.
Scientific Apparatus Makers Association

GENERAL INTEREST MEMBERS

Administrative Management Society, Inc.
American Institute of Certified Public Accountants
American Society of Mechanical Engineers
Association for Computing Machinery
Association for Educational Data Systems
Data Processing Management Association
Electronic Industries Association
Institute of Electrical and Electronic Engineers
Joint Users Group
National Bureau of Standards
Systems and Procedures Association
Telephone Group

PRODUCER MEMBERS

Addressograph Multigraph Corp.
Burroughs Corp.
Control Data Corp.
General Electric Co.
Honeywell, EDPD
International Business Machines Corp.
Litton Industries, Inc.
National Cash Register Co.
Olivetti Underwood Co.
Pitney Bowes Inc.
Radio Corporation of America
Standard Register Co.
UNIVAC

5.2.1.1. Listing of Committee X3 Organizations

Current Designation	Former Designation	Committee Name	Page
X3		Computers and Information Processing	69
X3/IPSSB		Information Processing Systems Standards Board	69
X3/IAC		International Advisory Committee	69
X3/SPARC		Standards Planning and Requirements Committee	70
X3/SPARC/DISP		Display Parameters	71
X3/SPARC/DOCN		Documentation	71
X3/SPARC/FDII		Format Description for Information Interchange	72
X3/SPARC/JOVL		JOVIAL	72
X3/SPARC/OSCL		Operating System Control Languages	72
X3/SPARC/PERF		Performance Evaluation	73

Current Designation	Former Designation	Committee Name	Page
X3/SPARC/TEXT		Codes for Textual Data	73
X3/SSC		Standards Steering Committee	74
X3A1	X3.1	Optical Character Recognition (OCR)	74
X3A11	X3.1.1	Font Design	75
X3A111	X3.1.1A	Handwritten Characters for OCR	75
X3A12	X3.1.2	Print Quality Specifications	75
X3A13	X3.1.3	Applications and Evaluations	75
X3A7	X3.7	Magnetic Ink Character Recognition	76
X3B1	X3.2.1	Magnetic Tape	76
X3B2	X3.2.2B	Perforated Tape	77
X3B3	X3.2.3A	Punched Cards (Physical)	77
X3B4	X3.2.2A	Edge Punched Cards	77
X3B7	X3.2.7	Interchangeable Magnetic Disk Media	77
X3B71	X3.2.7A	Mechanical Characteristics of Magnetic Disks	78
X3B72	X3.2.7B	Magnetic Characteristics of Magnetic Disks	78
X3B73	X3.2.7C	Magnetic Disk Control Formats	79
X3J1	CLDG	Composite Language Development	79
X3J3	X3.4.3	FORTRAN	80
X3J4	X3.4.4	COBOL Standards	80
X3J41	X3.4.4.1	Surveys	81
X3J42	X3.4.4.2	Compiler Feature Availability	81
X3J43	X3.4.4.3	COBOL Information Bulletin	81
X3J44	X3.4.4.4	COBOL Standard Maintenance	82
X3J7	X3.4.7	APT	82
X3J8	X3.4.8	ALGOL	82
X3K1	X3.6.8.1	Project Documentation	82
X3K2	X3.6.5	Flowcharts	83
X3K3	X3.6.3	Alphanumeric Presentation	83
X3K5	X3.5	Terminology and Glossary	83
X3K51	X3.5.1	Dictionary Maintenance	84
X3K52	X3.5.2	International Vocabulary	84
X3K53	X3.5.3	General Dictionary	85
X3K6	X3.6.6	Network-Oriented Project Management	85
X3L2	X3.2	Character Codes	85
X3L21	X3.2F	Transition to ASCII	86
X3L5	X3.2.5	Data Formats, Related Sets and Applications	86
X3L8	X3.8	Representations of Data Elements	87
X3L81	X3.8.1	Data Standardization Criteria	88
X3L82	X3.8.2	Time Designations	88
X3L83	X3.8.3	Individual and Business Identifications	89
X3L84	X3.8.4	Geographic Units	89
X3L86	X3.8.6	Quantitative Expressions	89
X3S3	X3.3	Data Transmission	90
X3S33	X3.3.3	Data Communications Formats	90
X3S34	X3.3.4	Data Communications Control Procedures	91
X3S35	X3.3.5	System Performance	91
X3S36	X3.3.6	Digital Data Transmission Speeds	91
X3T9	X3.9	I/O Interface Standards	92

5.2.1.2. Scopes, Programs of Work, and Federal Participants of ANSI X3 Committees [1]

X3

INFORMATION PROCESSING SYSTEMS STANDARDS BOARD

Scope:

To provide direct supervision of the hundreds of ANSI Technical activities, there exists within ANSI a number of Standards Boards, each responsible for several efforts in a general area of standardization. X3, along with the standards committees for office machines, vocabulary for automatic control and library sciences and documentation, reports to the Information Processing Systems Standards Board. The scope of the IPSSB is as follows:

All aspects of systems that transmit, store, or process analog, symbolic, or encoded representations of information, including satellite or control systems, peripheral equipment, and auxiliary devices that significantly influence the effective utilization of composite information processing systems.

Chairman: Mr. V. N. Vaughan
Engineering Director-Data Communications
195 Broadway
New York, New York 10007
212–393–3955

Federal Participants

Mr. George W. Dodson, Jr., (P),[2] General Services Admin., FSS
Dr. H.R.J. Grosch, (P), Department of Commerce, NBS
Dr. Joseph O. Harrison, Jr., (A), Department of Commerce, NBS
Mr. Wharton L. McGreer, (A), Department of Defense, OSD
Mr. Robert A. Raup, (P), Department of Defense, OSD
Mr. Delbert Shoemaker, (A), General Services Admin., FSS

[1] The Scopes and Programs of Work of ANSI X3 Committees are quoted documents and have not been edited to reflect the recent change in name of the American National Standards Institute. All references to ASA (American Standards Association) or to USASI (United States of America Standards Institute) should be understood to mean the American National Standards Institute.

[2] Letters in parentheses indicate the status of members on the various committees: (P)—Principal Member; (A)—Alternate; (O)—Observer; (L)—Liaison; (CH)—Chairman.

X3

COMPUTERS AND INFORMATION PROCESSING

Scope:

Standardization related to systems, computers, equipments, devices, languages, communication characteristics, and physical (non-electric) characteristics, of computers and data processing devices, equipments and systems, and media for information processing. (A full understanding of the committee's scope requires reference to the committee's program of work to be reviewed and approved quarterly by the USASI Information Processing System Standards Board (IPSSB).).

Program of Work:

X3 is responsible for the planning, review and approval of all domestic standardizations within its scope and serves, with its subgroups, as technical advisor to its USA Member Body of ISO/TC 97, Computers and Information Processing, in the area of international standardization.

Chairman: Mr. Charles A. Phillips
BEMA
1828 L St., N.W.
Washington, D.C. 20036
(202) 466–2288

Federal Participants

Dr. Joseph O. Harrison, Jr., (P), Department of Commerce, NBS
Mr. Wharton L. McGreer, (A), Department of Defense, OSD
Mr. Robert A. Raup, (P), Department of Defense, OSD
Mr. Jay E. Rice, (A), General Services Admin.
Mr. Delbert Shoemaker, (P), General Services Admin.
Mr. Harry S. White, Jr., (A), Department of Commerce, NBS

X3/IAC

INTERNATIONAL ADVISORY COMMITTEE

Scope:

The International Advisory Committee (IAC) is responsible for USASC X3's participation, via USASI, in all international standards projects falling within the scope of USASC X3.

Program of Work:

1. To insure that there is active participation by the U.S. in the working groups and subcommittees of ISO/TC 97 and related International Standards effort.

2. To insure that, where the U.S. has responsibility for the Secretariat of working groups of subcommittees, the appropriate subcommittee of USASC X3 is actively fulfilling its responsibilities.

3. Where there is not an exact correspondence between the scope of ISO/TC 97 working groups or subcommittees and USASC X3 subcommittees, to propose methods of insuring active participation in, and representation on, the ISO/TC 97 working groups or subcommittees.

4. By coordination of the activities of the U.S. Representatives on the ISO/TC 97 working groups and/or subcommittees, to formulate U.S. policy for approval by USASC X3 and the Sponsor, and to prepare, or have prepared, the U.S. contributions or recommendations to the plenary conferences of ISO/TC 97.

5. To propose to USASC X3, for accreditation by USASI, the U.S. delegation to such Plenary conferences. The Chief USA delegate is named by the Sponsor for USASI accreditation.

6. To provide orientations and briefings for USA delegations to meetings of ISO/TC 97 and its subgroups.

7. To participate in liaison activities with other international organizations as requested by the Secretariat of ISO/TC 97.

8. To recommend for approval by USASC X3 and the Sponsor all steps that should be taken to adequately fulfill the U.S. role in international standardization activities.

9. To review and coordinate the USASC X3 international procedures and activities with those of IEC, ISO, ECMA and other international and regional organizations.

10. Study candidate standards being considered by SPARC and submit a report to SPARC and USASC X3 showing the relationship of the candidate standard to any standards being developed or considered outside of the United States.

11. Study each proposed USASI Standard at the point when it is forwarded to USASC X3 by the subcommittee for processing. This report should show the relationship to standards being developed outside of the United States and point out any differences which exist between them.

12. The IAC shall not, itself, develop or write any standards.

Chairman: Mr. Vico E. Henriques
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Federal Participants

Mr. Helmut T. Thiess, (P), Department of Defense, Navy
Mr. Harry S. White, Jr., (P), Department of Commerce, NBS

SPARC

STANDARDS PLANNING AND REQUIREMENTS COMMITTEE

Scope:
1. Evaluates the needs for systems standards as may be required to effect the practical and economic interchange of data, files, software and equipment.

2. Initiates, analyzes, and makes recommendations on new standards projects as input for USASC X3 consideration.

3. Audits the program of standards development from a functional and economic point of view, as contrasted with a technical point of view.

4. At the time of submission to USASC X3, reviews the proposed standards regarding their conformance to the original objectives and reports the results of their review to USASC X3.

Program of Work:
1. SPARC will maintain a Master Program of USASC work including priorities, goals, schedules, implementation guides and progress review, procedures for quarterly review and approval by USASC X3. Such master programs shall be available from the Vice Chairman of USASC X3. Suitable press releases of this work, and candidate project standards will be prepared and issued by the Chairman of X3.

2. Study all existing USA standards and proposed USA standards under development dealing with computers and information processing in order to determine the interrelationships between such standards from user and manufacturer viewpoints.

3. Recommend to USASC X3 the establishment of new projects for the purpose of developing new standards or modifications of existing standards needed to take into account

the effects of the present system environment. These recommendations are to include criteria to be used in developing the new standards or modifications and the benefits to be derived from the proposed standards projects.

4. Proponents and opponents of a proposal may appeal to USASC X3 relative to any SPARC recommendation.

5. Each proposal for a new standards development effort will be supported by appropriate studies. The final recommendation for a new effort must include an analysis of:

Economic motivation of the user and manufacturer.
Implementation and transition considerations.
Applicational utility in the systems environment.
Analysis of costs of conversion and conformance.
Relationship to existing or under-development standards.
Technical feasibility.

6. As a monitoring group, review and evaluate from a user and manufacturer viewpoint proposals and recommendations for industry standards pertaining to computers and information processing and report its findings and recommendations to USASC X3 to insure that the proposed standards or work in progress indeed meet the objectives and scope assigned to it by USASC X3.

Note: The SPARC shall not, of itself, develop or write any standards.

7. SPARC will examine proposed USA standards to insure that they are implementable, clear, have demonstrated technical and economic feasibility, and speak to the criteria of development originally approved.

8. SPARC will advise USASC X3 as to the need and recommended composition of appropriate maintenance committees deemed needed to maintain and interpret approved standards.

9. Advise USASC X3 relative to proposed international recommendations and/or standards according to the criteria: Acceptability by the users and manufacturers of the United States.

10. Coordinate with the USASC X3 International Advisory Committee on such international matters.

11. Report on the degree of adoption and implementation of USA Standards (issued by X3) by the Information Processing Community.

Study Projects:
205 Data Description
206 Eleven-high Disc Pack
207 Data Syntax Language
208 Numeric Conversion
210 Standard Machine (arithmetic, operations codes, etc.)

Chairman: Mr. Thomas B. Steel, Jr.
22374 MacFarlane Drive
Woodland Hills, Calif. 91364
(213) 346–5065

Federal Participants

Mr. Clark R. Renninger, (P), Office of Management & Budget
Mr. Harry S. White, Jr., (P), Department of Commerce, NBS

X3/SPARC/DISP

DISPLAY PARAMETERS

Study Projects:
204 Display Parameters—Physical

Chairman: Mr. S. Sherr
Hazeltine Company
59–25 Little Neck Parkway
Little Neck, N.Y. 11362
(212) 321–2300

X3/SPARC/DOCN

DOCUMENTATION

Scope:
To study the documentation requirements imposed by information processing activities, including computer activities; to isolate specific areas in which standardization would benefit the information processing community and to provide such standards.

Study Projects:
211 Standard Program Abstracts

Chairman: Mr. J. E. Ridgell
Headquarters USAF (AFADAB)
Washington, D.C. 20440
(202) 274–0231

Federal Participants

Mr. Robert Hegland, (P), Department of Defense, Navy
Mrs. Frances E. Holberton, (P), Department of Commerce, NBS
Mr. Oliver W. Parson, (A), Department of Defense, Navy
Mr. James N. Ridgell, (CH), Department of Defense, USAF
Mr. Richard S. Watt, (P), Federal Reserve System
Mr. Wayne Worrell, (A), Department of Defense, Army

X3/SPARC/FDII

FORMAT DESCRIPTION
FOR INFORMATION INTERCHANGE

Scope:
Development of standards for data formats and structures and their description, with particular reference to the problem of data interchange between independent data processing systems.

Program of Work:
Develop standards for the structuring of data elements into records. Continuing work on developing definitions for a communications language and on developing standardization of the syntax of the text of the language.

Study Projects:
214 Format Description for Information Interchange

Acting Chairman: Harry S. White, Jr.
Office of Information Processing Standards
National Bureau of Standards
Washington, D.C. 20234
(301) 921–3551

Federal Participants

Mr. Harry S. White, Jr., (CH), Department of Commerce, NBS

X3/SPARC/JOVL

JOVIAL

Scope:
To investigate the programming language JOVIAL for the purpose of determining its suitability as a candidate for standardization.

Program of Work:
The ad hoc committee JOVIAL shall do at least the following in considering the suitability of the language for standardization.

1. Delineate the present and, if possible, the potential, application area(s).

2. Consider and report on other existing languages which are now, or may in the future be, used in the delineated application area(s); these other languages include, but are not restricted to: PL/1, NELIAC, COBOL, Space Programming Language (SPL), and implemented extensions of Revised ALGOL 60.

3. Recommend disposition of the language under consideration according to a determination of whether general suitability criteria (as described in section 8 of Procedure for the Standardization Process, document number X3.4/68–3) appear to be met and without prejudice to the standardization of the other languages identified by the ad hoc committee under (2).

4. Comment regarding the standardization of the other languages identified by the ad hoc committee under (2).

5. Provide documentation of deliberations and conclusions reached in examining the criteria (See section 8 of X3.4.4/68–3 and work done under points (1) through (4) above.

Study Projects:
201 JOVIAL

Chairman: Mr. A. Sorkowitz
NAVCOSSACT, Code 21
Bldg. 196
Washington Navy Yard
Washington, D.C. 20390
W: (202) 693–3550

Federal Participants

Lt. Roger Engelback, (A), Department of Defense, USAF
Maj. Samuel P. Herod, (P), Department of Defense, USAF
Mr. Al Sorkowitz, (CH), Department of Defense, Navy
Lt. William C. Webster, (A), Department of Defense, Navy
Mr. Robert E. White, (A), Department of Defense, DIA

X3/SPARC/OSCL

OPERATING SYSTEM CONTROL
LANGUAGES

Scope:
To investigate the need for and feasibility of a standard computer-operating-system control language. (The phrase, "computer-operating-system control language," means control and status aspects of at least interactive, time-sharing, and batch-processing systems.) To investigate as suitable candidates for standardization: existing and proposed languages, elements of languages, and functions to be implemented in languages.

Program of Work:
1. The committee should first conduct a survey of language functions for control and status reporting offered by major operating and single-language systems (e.g., GECOS-III, OS, TSS, BASIC, QUICKTRAN, ATS). The com-

mittee should develop summaries of the similarities and of the essential and superficial differences of language functions in various categories of existing and proposed systems.

2. The committee should determine more specifically the types of users whose needs the language(s) will serve, e.g., applications programmers, systems programmers, data-base managers, query users, machine operators, systems engineers, maintenance personnel, satellite computer users, etc.; and thus delineate the present and, if possible, the potential application areas.

3. The committee should consider and report on the hardware implications of the language functions identified.

4. The committee should make recommendations regarding the need for a standard, the suitability of candidates, the possible desirability of multiple standards, and piecemeal verses complete standardization.

5. The committee should provide documentation of deliberations and conclusions reached, and the relevant criteria applied in carrying out the program of work.

Study Projects:
202 Prestandardization investigation of operating system control languages

Chairman: Mr. Millard H. Perstein
System Development Corporation
2500 Colorado Avenue
Santa Monica, Calif. 90406
W: (213) 292–9411

Federal Participants

Mr. Alan R. Barnum, (P), Department of Defense, USAF
Mr. John L. Little, (P), Department of Commerce, NBS

X3/SPARC/PERF

PERFORMANCE EVALUATION

Scope:
To formulate uniform criteria for the measurements of the performance, or value, of an information processing system.

Program of Work:
1. Define specific areas for standardization and depth of standardization (scope).

2. Establish task groups and more detailed working plan and organization of X3.6.

3. Present working plan and organization of X3.6.

4. Implementation of working schedule; develop standard.

5. Present to X3 for vote and publication.

Study Projects:
209 Performance Evaluation

Chairman: Mr. John R. Crawford
Bell Telephone Labs, Inc.
2 Jackson Drive
Cranford, N.J. 07016
(201) 272–2500, X6623

Federal Participants

Mr. J. T. O'Neill, (P), Department of Commerce, NBS
Mr. C. Roger Shoch, (P), Department of Defense, Navy

X3/SPARC/TEXT

CODES FOR TEXTUAL DATA

Scope:
This group will develop a standard or standards to provide for the Information Interchange of Textual Data. The standard will be appropriate for recording serial by character in media such as magnetic tape (re. ANS X3.22–1968), paper tape (re. ANS X3.6–1966) and also for transmission by telecommunications facilities (re. ANS X3.16–1966). The code will be derived from the American National Standard for Information Interchange (ASCII) ANS X3.4–1968 as one of the family of standard 8-bit codes using the standard doctrines for code extension and expansion developed in Subcommittee X3.2 on Codes and Character Sets. With respect to recording on magnetic tape, the requirements for proper labeling under the provisions of ANS X3.27–1969 and its revisions will be taken into account.

Program of Work:
1. Derive and develop notation necessary to describe the graphic symbols and information content on the interchange media. This should be open ended such that additions can be made to it.

2. To define and describe the information that will and will not appear on the interchange media.

3. To define the form and structure of the data on the interchange media.

Study Projects:
203 Representation of Textual Matters

Chairman: Dr. B. C. Duncan
National Bureau of Standards
Room B 154, Chemistry Bldg.
Washington, D.C. 20234
(301) 921–3620

Federal Participants

Dr. Blanton C. Duncan, (CH), Department of Commerce, NBS
Mrs. Lucia J. Rather, (P), Library of Congress

X3/SSC

STANDARDS STEERING COMMITTEE

Scope:
Provides for X3 the technical management relative to initiation, development, monitoring, and validation of pUSAS standards in accordance with the direction of X3.

Program of Work:
1. On all candidate new standards projects, prepare and submit recommendations to X3 and SPARC relative to each candidate standards project concerning: technical feasibility; impact on other standards, proposed and approved; assignment of a standards project to technical committee (new or existing); the program of work to be conducted by the Technical committee; schedule for development and key benchmarks for reporting progress; the criteria by which the technical work will be measured to determine if it has accomplished the objective.

2. On all standards projects authorized by X3: establish technical work assignments, technical criteria, and schedule in accordance with direction of X3; monitor proposed standards under development for their technical criteria and adherence to previously identified and approved benchmarks; prepare for X3 the master technical work plan describing the work in progress at the technical committees of X3, showing the schedule and those areas of standardization within a three (3) year period, and the relationship with existing standards and foreign and international standards; study and advise X3 on the systems considerations which arise from the interrelationships of the work of the technical committees.

3. On all proposed standards approved by the Subcommittees, prepare and submit a report to X3 and SPARC concerning the technical content of the pUSAS with respect to the original technical objectives and measurement criteria.

Chairman: Mr. Eric H. Clamons
RD 1
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(215) 962–5868

Federal Participants

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Mr. Philip S. Johnson, (P), Department of Commerce, NBS
Mr. Robert J. Lambird, (P), Department of Commerce, Census
Mr. Bernard J. Radack, (P), Department of the Treasury, IRS
Mr. C. Roger Shoch, (P), Department of Defense, Navy

X3A1 (3.1)

OPTICAL CHARACTER RECOGNITION (OCR)

Scope:
Standardization of printed input and output to data processing systems for interchange of information between central processing units and associated equipment of information processing systems including hand printed characters used for machine input media and excluding magnetic character based systems.

Program of Work:
1. Design of lower case font characters.

2. Design of erase symbols.

3. Development of a glossary of terms.

4. Establishment of abstract symbol coding.

5. Assist industry user associations and the government in implementation of the OCR Standard.

6. Support interpretation and implementation of X3.17–1966.

7. Liaison with peripheral committees (typewriters and keyboards, handprinted characters, and TAPPI).

8. Develop U.S. contributions to ISO/TC87/SC3 on subject of OCR specifications.

9. Review, maintain, and update X3.17–1966.

10. Consider standardization of handprinted characters for OCR, joint print quality program with NBS, improvement of American Standard X3.17–1966, and credit card standardization.

Study Projects:
57 OCR–A (3.17–1966)
61 OCR–B for USA
62 Handprinted Characters
69 Print Quality Specification

Chairman: Mr. B. J. Vincent
3421 Webb Garden Drive
Dallas, Tex. 75229
(214) 358–3825

Federal Participants

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Mr. Henry F. Burkhard, (A), Department of Defense, Army
Mr. Walter A. Dickerson, (VC), Department of Agriculture
Mr. Charles P. Eliot, (A), Post Office Department
Mr. David C. Friedman, (P), Department of Commerce, NBS
Mr. Stanley Homa, (P), Department of Defense, Army
Mr. Henry S. Mayhew, (P), Dept. of Health, Education and Welfare, SSA
Mr. Roy Rapp, (A), Dept. of Health, Education and Welfare, SSA
Maj. Oliver C. Stokes, Jr., (A), Department of Defense, DCA
Mr. Gregory Vogel, (P), Post Office Department
Mr. Roy W. Worral, (A), Department of Commerce, NBS

X3A11 (X3.1.1)

FONT DESIGN

Scope:
Design of characters as assigned by X3.1.3 so that they can be satisfactorily read by state-of-the-art optical readers. X3.1.1 does not write the standard, but only designs the characters.

Program of Work:
This is determined at each meeting depending on the results that have been obtained by persons assigned specific tasks in between meetings. On OCR–B it is dependent on ECMA progress in improving readability of characters. In Hand Print the first draft of standard character design with limits, etc. should be ready for review by committee in June.

Study Projects:
61 OCR–B—USA
62 Hand Printed Characters
100 Library Characters
59 ASCII Character Extension

Chairman: Mr. Klaas Bol
General Electric Co.
13430 N. Black Canyon Hwy.
Mail Drop K–71
Phoenix, Ariz. 85029
(602) 263–2255

Federal Participants

Mr. H. Thomas Anderson, (P), Department of Defense, USAF
Mr. Henry F. Burkhard, (A), Department of Defense, Army
Mr. Stanley Homa, (P), Department of I efense, Army
Mr. Stephen Stromick, (P), Department of Defense, USAF
Maj. Oliver C. Stokes, Jr., (A), Department of Defense, DCA

X3A111 (X3.1.1A)

HANDWRITTEN CHARACTERS FOR OCR

Chairman: Mr. A. Hamburgen
IBM Corporation
3605 Hwy. 52 North
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Rochester, Minnesota 55901
(507) 286–2849

Study Projects:
62 Handprinted Characters

X3A12 (X3.1.2)

PRINT QUALITY SPECIFICATION

Scope:
To establish standards for printing, paper, and other applicable media to be used in optical character recognition systems; to aid in the implementation and use of such standards; and to provide for identification and measurement techniques of the relevant parameters.

Study Projects:
69 Print Quality Specification

Chairman: Mr. R. I. Verb
Management Concepts, Inc.
540 Frontage Road
Northfield, Ill. 60093
(312) 446–3775

Federal Participants

Mr. David C. Friedman, (P), Department of Commerce, NBS
Mr. Roy W. Worral, (A), Department of Commerce, NBS

X3A13 (X3.1.3)

APPLICATIONS AND EVALUATION

Scope:
Responsible to X3.1 for the coordination, liaison, maintenance, application areas, and all communications as they affect optical recognition machines.

Program of Work:
Responsible for the coordination, editorial, maintenance, liaison, glossary and applications, including relationships with other standards efforts as they affect X3.17 or other proposed and/or approved ANSI optical recognition standards for machines.

Study Projects:
57 Revision to X3.17–1966
61 Investigation of OCR–B
59 Extension of OCR–A Character Set to encompass ASCII Character Set
60 Investigate Optical Reading of Microfilm
58 Liaison with NMA

Chairman: Mr. J. P. Ancona
IBM Corporation
590 Madison Ave.
New York, N.Y.
(212) 753–1900, X3462

X3A7 (X3.7)

MAGNETIC INK CHARACTER RECOGNITION

Scope:
1. Development and maintenance for Magnetic Ink Character Recognition (MICR).

2. Resolution of problems which may arise in industry which involve MICR processing equipment and the printing of MICR documents.

Study Projects:
17 (Maintenance)—ABA Supplement
18 (Maintenance)—Scenic and Fancy Checks

Chairman: Mr. E. D. Spina
IBM Corporation
Armonk, N.Y. 10504
(914) 765–2418

X3B1 (X3.2.1)

MAGNETIC TAPE

Scope:
The standardization of those recorded and unrecorded characteristics of input/output magnetic tape media required for the interchange of information among information processing systems, communications systems, and associated equipment in the field of digital magnetic tape recording including:

1. The coordination, maintenance, revision, and support of the current magnetic tape standard(s) and standards proposals for ½-inch, 9-channel tape.

2. The development of a standard or standards for a magnetic tape cassette/cartridge device(s) for digital information interchange which includes consideration of the container, media, recording characteristics, and format.

Program of Work:
1. Identify, analyze, and select an applicable range of tape cassette/cartridge performance requirements.

2. Define the most suitable unrecorded cassette/cartridge and tape media parameters which fulfill the performance requirements.

3. Define the most suitable recorded parameters which fulfill the performance requirements.

4. a. Develop a physical interchange standard(s) for cassette/cartridge.
b. Develop an unrecorded media standard(s) for the physical and magnetic characteristics of the recording media.
c. Develop a recorded media standard(s) for use in the interchange of data among similar recording and reproducing equipments.
d. Develop a format/label standard(s) for representing and recording information on cassettes/cartridges.

5. Maintain close liaison with other related organizations and standards bodies.

6. Support the international work on standardization of digital magnetic tape and tape cassettes/cartridges.

Standards Development Projects:
70 Unrecorded Magnetic Tape ½"
71 200 cpi NRZI Recorded Magnetic Tape
72 800 cpi NRZI Recorded Magnetic Tape
73 1600 cpi PM Recorded Magnetic Tape
213 Magnetic Tape Cassettes/Cartridges

Chairman: Mr. A. J. Burkhart, Jr.
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NBS Building 225, Room A109
National Bureau of Standards
Washington, D.C. 20234
301–921–3697
IDS–164–3697

Federal Participants

Mr. A. J. Burkhart, (CH), General Services Administration
Mr. John Eastman, (O), General Services Administration
Mr. H. A. Harback, (P), General Services Administration
Mr. Philip S. Johnson, (P), Department of Commerce, NBS
Mr. Paul Mantek, (A), Department of Commerce, NBS
Mr. Delbert Shoemaker, (O), General Services Administration

X3B2 (X3.2.2B)

PERFORATED TAPE

Scope:
The standardization of those physical and coding characteristics of input/output media which are required for the interchange of information among data processing systems and systems of associated equipment in the field of perforated tape (properties of punched tape).

Program of Work:
Current activity—Paper material standard, tape handling conventions, tapes of high durability, ISO activities in paper material, tape handling conventions, cores and reels, and tapes of high density.

Study Projects:
76 One Inch Perforated Tape (X3.18–1967)
77 Eleven-Sixteenths Perforated Paper Tape (X3.19–1967)
78 Take-Up Reels for 1-in Perforated Tape (X3.20–1967)
79 Properties of Unpunched Paper Tape
80 Interchange Rolls, Perforated Tape

Chairman: Mr. F. W. Smith
Western Union Telegraph Co.
82 McKee Drive
Mahwah, N. J. 07430
(201) 529–4600 X2492

Federal Participants

Mr. W. F. Dietericks, (P), General Services Administration, FSS
Mr. B. V. Magee, (P), Department of Defense, Army

X3B3 (X3.2.3A)

PUNCHED CARDS (PHYSICAL)

Scope:
The standardization of those physical and coding characteristics of input/output media which are required for the interchange of information among data processing systems and systems of associated equipment in the field of punched cards (physical characteristics of punched cards).

Program of Work:
1. Special Purpose paper card specifications (short cards, irregular edge cards).

2. ISO 97/4/2 N 51 specifications for unpunched paper cards.

3. ISO 97/4/2 N 52 dimensions and location of rectangular punched holes in 80 column punched paper cards.

4. Review of X3.11–1966 general purpose paper cards for information processing.

5. Monitor X3.21–1967, size and location of rectangular punched holes.

Study Projects:
29 Special Purpose Paper Cards
67 Unpunched Paper Cards
68 Rectangular Punched Holes in Paper Cards

Chairman: Mr. W. J. Roeder
Scott Paper Company
520 W. 14th Street
Naperville, Ill. 60540
(312) 654–4140

Federal Participants

Mr. W. F. Dietericks, General Services Administration, FSS

X3B4 (X3.2.2A)

EDGE PUNCHED CARDS

Scope:
The standardization of those physical and coding characteristics of input/output media which are required for the interchange of information among data processing systems and systems of associated equipment in the field of perforated tape (edge punched cards).

Program of Work:
1. Standard 3¼-inch by 8½-inch edge punched card for information interchange; specifically, physical and chemical properties of card stock, dimensions, and tolerances of cards, nature of leading edge (including nature of perforations at fold, nature of precision cut at leading edge, and thickness at fold of fan-folded cards when unfolded), dimensions and location of index hole(s), dimensions and location of feed and code holes, location of printing, if required, and labeling area.

2. Edge punched documents other than 3¼-inch by 8½-inch size.

Study Projects:
74 Standard 3¼-inch by 8½-inch Edge Punched Card
75 Other Edge Punched Documents

X3B7 (X3.2.7)

INTERCHANGEABLE MAGNETIC DISC MEDIA

Scope:
Standardization of the physical and magnetic characteristics and control formats of removable magnetic disc media as required for data interchange.

Program of Work:
1. To direct and coordinate the work of ad hoc groups X3.2.7A, X3.2.7B, and X3.2.7C.

2. To determine the elements to be contained in each of a family of standards providing for interchange of information on magnetic discs and to incorporate the specifications provided by the ad hoc groups into the required standards.

3. To maintain liaison with X3.2.5 with respect to its work on data formats to be used for information interchange on discs.

4. To support international work on standardization of removable magnetic discs.

5. To investigate requirements for standardization of removable discs other than those compatible with the IBM 2311–I disc drive.

Study Projects:
63 Eleven-high Disc Pack Study

Chairman: Mr. Philip S. Johnson
Office of Information Processing Standards
National Bureau of Standards
Washington, D.C. 20234
W: (301) 921–3547

Federal Participants

Mr. Roger D. Daniero, (A), General Services Administration
Mr. John Eastman, (P), General Services Administration
Mr. Philip S. Johnson, (CH), Department of Commerce, NBS
Mr. J. L. DeProspero, (A) General Services Administration
Mr. Delbert Shoemaker, (O), General Services Administration
Mr. Philip D. Shupe, (P), Department of Commerce, NBS

X3B71 (X3.2.7A)

MECHANICAL CHARACTERISTICS OF MAGNETIC DISCS

Scope:
To define and develop specifications for the physical characteristics of interchangeable magnetic discs which are necessary for mechanical interchange of the medium among information processing systems.

Program of Work:
1. To develop specifications for the following significant mechanical parameters of six-disc packs:
   a. Operating, storage and testing environments
   b. Shipping and handling requirements
   c. Materials
   d. Physical dimensions
   e. Weight
   f. Moment of inertia
   g. Balance
   h. Rotational speed
   i. Locking pull
   j. Air feed openings
   k. Air filter
   l. Roughness and durability of magnetic surface

2. To provide supporting diagrams and glossary for above specifications.

3. To define test procedures to determine conformity with the specifications.

4. To advise X3.2.7 with respect to mechanical aspects of international standards proposals.

Study Projects:
64 Mechanical Characteristics (six-high)

Chairman: Mr. Richard J. Penny
Xerox Data Systems
701 South Aviation Boulevard
El Segundo, Calif. 90245
(213) 679–4511, X328

X3B72 (X3.2.7B)

MAGNETIC CHARACTERISTICS OF MAGNETIC DISCS

Scope:
To define and develop specifications for the magnetic characteristics of interchangeable magnetic discs which are necessary for interchange of recorded bits among information processing systems.

Program of Work:
1. To develop specifications for the following significant magnetic parameters of six-disc packs to be used on disc drives compatible with the IBM 2311–I:
   a. Magnetic surface characteristics
   b. Magnetic recording area
   c. Number of tracks
   d. Minimum number of usable tracks
   e. Recorded track width
   f. Centerline location of tracks, including skew
   g. Recording mode
   h. Flux reversal rate
   i. Erasure
   j. Transducer specification or transfer functions
   k. Track quality characteristics

2. To provide supporting diagrams and glossary for the above specifications.

3. To define test procedures and/or instrumentation to determine conformity with the specifications.

4. To advise X3.2.7 with respect to magnetic aspects of international standards proposals.

Study Projects:
65 Magnetic Characteristics (six-high)

Chairman: Mr. William W. Carlson
Caelus Memories, Inc.
967 Mabury Road
San Jose, Calif. 95133
(408) 298–7080

X3B73 (X3.2.7C)

MAGNETIC DISC CONTROL FORMATS

Scope:
To define and develop specifications for the control format which are necessary for the interchange of information recorded on magnetic disc packs among information processing systems.

Program of Work:
1. To define the operating system and computing system environments among which interchange takes place.

2. To develop specifications for the following significant parameters of the six-high disc pack:
a. Record structure
b. Gap structure
c. Checking technique
d. Address structure
e. Alternate track handling

3. To provide supporting documentation for the above specifications.

4. To maintain close liaison with X3.2.5 in all matters pertaining to the specifications.

5. To advise X3.2.7 with respect to control format aspects of international standards proposals.

Study Projects:
66 Control Formats & Codes (six-high)

Chairman: Mr. John Homberg
Honeywell, Inc.
200 Smith Street
Waltham, Mass. 02154
(617) 891–8400 X2670

X3J1 (CLDG)

COMPOSITE LANGUAGE DEVELOPMENT

Scope:
Proposal of a draft American National and ISO Standard for the composite programming language PL/1, in cooperation with ECMA Technical Committee 10 and with the technical cognizance of IFIP Technical Committee 2.

Program of Work:
1. To establish and maintain a mechanism for effective cooperation with and participation in the work of Technical Committee 10 of ECMA, and a mechanism for liaison with Technical Committee 2 of IFIP and other interested technical agencies and standards bodies, in order to minimize duplication of effort and to assure the proposal of consistent standards.

2. To consider the 1968 March 11 PL/1 Language Specifications and other relevant documents with a view to eliminating ambiguous interpretation, and for the purpose of evaluating the language.

3. To incorporate clarifications, changes, deletions, and extensions consistent with the basic philosophy of the language.

4. To establish and apply criteria to insure that the resulting language takes into account particular national requirements and allows widespread implementation and use.

5. To prepare, as a result of this work, a complete definition of the language and a statement of the areas of application of the language.

6. To propose the language and, if appropriate, one or more subsets, to X3 for processing as American National Standards and to ISO/TC97 as an international recommendation.

7. To report in writing all activities directly to ANSI/X3, with copies to ECMA/TC10 and IFIP/TC2 as appropriate.

Study Projects:
212 Composite Language

Chairman: Dr. D. E. Eastwood
Director, CCIS
Rutgers University
New Brunswick, N.J. 08903
(201) 247–1766 X6817

Federal Participants

Miss Patricia Langendorf, (P), Department of Defense, USAF
Mr. John L. Strain, (A), Department of Defense, Army

X3J3 (X3.4.3)

FORTRAN

Scope:
Maintenance, updating, and clarification/interpretation of the USA FORTRAN Standard.

Study Projects:
101 Maintenance and Clarification of FORTRAN (X3.9–1966)
102 Maintenance and Clarification of Basic FORTRAN (X3.10–1966)

Chairman: Mr. D. E. Hamilton
Univac, Systems Programming
P.O. Box 8100
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(215) 646–9000 X3417

Federal Participants

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Mr. Robert Danek, (P), National Aeronautics and Space Administration
Mr. David Eaton, (A), Department of Defense, Navy
Mrs. Frances E. Holberton, (P), Department of Commerce, NBS
Mrs. Elizabeth Parker, (O), Department of Commerce, NBS
Mr. J. D. Waggoner, (P), Department of Defense, Army

X3J4 (X3.4.4)

COBOL STANDARDS

Scope:
Create and carry out procedures to maintain the continuous responsiveness of the standard language to user needs. Continue support of the Standard Audit Routines and publication of the COBOL Information Bulletin.

Program of Work:
1. Define the formal procedures necessary to insure the continued responsiveness of the language after issuance of the standard (post-standardization continuity). Include provisions for measuring and evaluating language changes—both as to growth (extension of facilities and use of the language) and contraction; and eliminating ambiguities through interpretation and clarification of the standard language.

2. Provide liaison with cognizant national and international organizations to maintain a current awareness of language activity and requirements.

3. By means of the procedures mentioned in No. 1 above, ascertain those features required in (or to be deleted from) the standard language to keep it responsive to user needs. This procedure may include defining and conducting (or monitoring) user surveys to help measure the value of applying relevant changes to the standard.

4. Establish a dialogue with the COBOL community regarding language activity including post-standardization continuity. As a means of promoting this dialogue and to make public the results of it, publish the COBOL Information Bulletin and disseminate it to the widest possible audience.

5. Maintain and publish the COBOL Standard Audit Routines, keeping them in concordance with the standard language.

6. Revise and augment the Standard and the Standard Audit Routines, according to the developed procedures for post-standardization continuity. These revisions and augmentations to be accomplished on an "as necessary" basis.

7. Establish task groups as necessary to accomplish this program of work.

Study Projects:
19 COBOL Survey
20 COBOL Standard Audit Routines
21 COBOL Information Bulletin
22 COBOL Standard Continuity

Chairman: Mr. Howard Bromberg
Information Management Inc.
447 Battery Street
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(415) 981–2645

Federal Participants

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Mr. Joseph E. Bishop, (P) Department of Defense USAF
Mr. H. R. Fletcher, (P), Department of Commerce, Census
Mr. Richard C. Fredette, (A), Department of Defense, Navy
Mr. Albert N. McMahan, (A), Department of Defense, USAF
Mr. Robert E. Rountree, (A), Department of Commerce, NBS
Miss Mabel V. Vickers, (P), Department of Commerce, NBS

X3J41 (X3.4.4.1)

SURVEYS

Scope:
Inform X3.4.4 on the effectiveness, utilization, and desirability of language features in ANSI Standard COBOL. Submit to X3.4.4 for information, the evaluated results of COBOL user studies and surveys.

Program of Work:
1. Conduct surveys and special studies of COBOL users, where authorized by X3.4.4.

2. With the approval of X3.4.4, consider organizations which may be used to assist X3.4.4.1 in the conduct of required surveys and studies.

3. Maintain an awareness of and participate in relevant survey activities outside the ANSI environment.

4. Report on new elements which users would like included in COBOL as well as current elements which users would like dropped from COBOL.

5. Establish and submit to X3.4.4 for approval membership, attendance, and voting rules.

6. Establish and submit to X3.4.4 for approval other technical and administrative procedures necessary to carry out this program of work.

Chairman: Mr. H. R. Fletcher
Bureau of Census, FOB #3
Computer Sciences Staff
Suitland, Md. 20023
(301) 440–7228

Federal Participants

Mr. H. R. Fletcher, (CH), Department of Commerce, Census

X3J42 (X3.4.4.2)

COMPILER FEATURE AVAILABILITY

Scope:
Continue the development and maintenance of the ANSI Standard COBOL Audit Routines, support routines, and documentation thereof. Develop new routines and revise existing routines as changes to the Standard are effected. Submit routines and documentation to X3.4.4 for approval.

Program of Work:
1. Develop initial Standard COBOL Audit Routines, based on X3.23–1968, designed to establish that:

a. A compiler will accept or reject the standard forms of COBOL source-program statements for a given level of a functional processing module, and;
b. An object program product from the standard statements will execute and produce expected results.

2. Review Proposed Draft Proposed Standards for impact on existing routines and documentation.

3. Develop work plans so that, as drafts of changes to the Standard reach the Proposed Standard level, necessary changes to the Audit Routines are submitted to X3.4.4 for approval.

4. Review and recommend action to be taken on all requests for clarification or revision of the Audit Routines.

5. Submit matters of interpretation or clarification of the Standard to X3.4.4.

6. Maintain custody and integrity of the master copies of the Audit Routines.

Chairman: Mr. R. R. Risley
Hoffman-LaRoche, Inc.
Programming Dept.
Nutley, N.J. 07110
(201) 235–5000

Federal Participation

Mr. George Baird, (A), Department of Defense, Navy
Mr. Richard C. Fredette, (P), Department of Defense, Navy

X3J43 (X3.4.4.3)

COBOL INFORMATION BULLETIN

Scope:
Publication of the COBOL Information Bulletin.

Program of Work:
1. Provide a means of communication for COBOL users and implementors on the latest developments of the COBOL language.

2. Report on the progress of the establishment of domestic and international standards.

Chairman: Mr. R. Fredette
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(202) 697–0725

Federal Participants

Mr. R. Fredette, (CH), Department of Defense, Navy

X3J44 (X3.4.4.4)

COBOL STANDARD MAINTENANCE

Scope:
Review ANSI Standard COBOL as well as all technical documents received from X3.4.4 to determine where clarifications or revisions may be required to ANSI Standard COBOL. Submit to X3.4.4 for approval the findings and recommendations of X3.4.4.4.

Program of Work:

1. Conduct reviews of ANSI Standard COBOL for purpose of evaluating language changes—both as to growth (extension of facilities and use of the language) and contraction; and eliminating ambiguities through interpretation and clarification of the Standard language.

2. Review, provide appropriate interpretation, and recommend action to be taken on all requests for clarifications of the Standard.

3. Review, determine necessary changes, and recommend action to be taken on all requests for revisions of the Standard.

4. Prepare the necessary documents to effect the X3.4.4 approved changes to the ANSI Standard COBOL document.

5. Prepare the necessary documents for distribution to the COBOL community stating the approved interpretations of the ANSI Standard COBOL.

6. Where appropriate, select resources outside the membership of X3.4.4.4 to carry out specific working group tasks; monitor the work of all such activities.

7. Communicate to X3.4.4 the need for information required to accomplish the program of work stated above.

Chairman: Mr. R. F. Betscha
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Miss Mabel V. Vickers, (P), Department of Commerce, NBS

X3J7 (X3.4.7)

APT

Scope:
Preparation of a draft proposed standard for APT programming language.

Program of Work:
See Scope above.

Study Projects:
55 APT Programming Language

Chairman: Mr. Andrew H. Fowler
University Computing Company
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Dallas, Tex. 75222
(214) 741–5781, X871

Federal Participants

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Mr. Bobbie J. Parkinson, (P), Department of Defense, USAF

X3J8 (X3.4.8)

ALGOL

Scope:
In coordination with ISO, prepare a draft proposed USA ALGOL Standard.

Study Projects:
30 Standard ALGOL

Chairman: Mrs. M. Green
Scientific Resources, Inc.
340 West State Street
Trenton, N.J. 08618
(609) 394–5067

X3K1 (X3.6.8.1)

PROJECT DOCUMENTATION

Scope:
To develop standard documentation for the following basic functions of project accomplishment—introduction of project for consideration, definition, design (preliminary and detailed) implementation (programming, testing, conversion), operation (production), and evaluation.

Study Projects:
16 Project Documentation-Guideline

Chairman: Miss Yvonne Tolson
UNIVAC, Federal Systems Div.
2121 Wisconsin Ave., N.W.
Washington, D.C. 20007
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Federal Participants

Mrs. Frances E. Holberton, (P), Department of Commerce, NBS
Mrs. Sorine A. Preli, (P), Federal Mediation and Conciliation Service

X3K2 (X3.6.5)

FLOWCHARTS

Scope:
To develop standards in the design and use of flowcharts and the techniques of flowcharting for problem definition and analyses in information processing systems (including the identification of the types of flowcharts, the structure of flowcharts, the symbology used on flowcharts, and flowchart presentation techniques).

Program of Work:
1. Study area and establish appropriate task groups.

2. Incorporate ISO 13 Symbols and present to X3.

3. Review existing standard for major editing and rework.

4. Develop a standard for new symbols and conventions.

Study Projects:
81 Standard Flowchart Symbols (X3.5–1970)

Chairman: Mr. D. Mace
IBM Corporation
1000 Westchester Avenue
White Plains, N.Y. 10604
(914) 696–5015

Federal Participants

Mr. R. Strausberg, (P), Department of Defense, Navy

X3K3 (X3.6.3)

ALPHANUMERIC PRESENTATION

Scope:
The scope is confined to the handprinted presentation of the alphabetic characters A to Z, numerals zero to 9, and special characters in man-to-man communication, Ref. X3.6.3/1, 67–10–18.

Program of Work:
The future program of work includes:

1. Resolving comments on X3.6.3/6

2. Preparing revised dpANS

3. Studying lower case and special characters

4. Incorporating results into ANS Alphanumeric Presentation

5. Liaison with X3.1.1A

Study Projects:
23 Alphanumeric Presentation
24 Extension of Alphanumeric Presentation to include special characters and lower case.

Chairman: Mr. William D. Morgan
2608 N. Nottingham St.
Arlington, Va. 22207
(202) 695–0282

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Mr. Delbert Shoemaker, (P), General Services Administration
Mr. Wayne Worrell, (A), Department of Defense, Army

X3K5 (X3.5)

TERMINOLOGY AND GLOSSARY

Scope:
To coordinate and advise the other subcommittees of ANSI X3 in the establishment of definitions required for their proposed standards. To recommend to X3 a general vocabulary for computers and information processing. To support the development of an international vocabulary for computers and information processing.

Program of Work:
1. To develop, document, and maintain policy and operating procedures to be followed by X3.5 working groups.

2. To maintain active liaison with ANSI X3 and its subcommittees fostering an environment of mutual cooperation in vocabulary matters.

3. To review working papers produced by X3.5 working groups, evaluating them for quality, timeliness, and completeness.

84

4. To forward approved working papers through established channels to appropriate ANSI and international organizations.

Study Projects:
25 ANS Vocabulary for Information Processing
26 American National Dictionary for Information Processing
27 International Standard Multilingual Vocabulary for Information Processing

Chairman: Mr. Martin H. Weik
U.S. Army Information Systems Office
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Miss Josephine L. Walkowicz, (P), Department of Commerce, NBS
Mr. Martin H. Weik, Jr., (CH), Department of Defense, Army

X3K51 (X3.5.1)

DICTIONARY MAINTENANCE

Scope:
1. To prepare and maintain a Master Working Vocabulary (MWV) containing terms and definitions as needed.

2. To maintain a file of approved terms and definitions in machine readable form suitable for providing periodic formatted listings.

3. To extract proposed revisions for the American National Information Processing Dictionary from the Master Working Vocabulary and to maintain the extracted material as instructed by X3.5.3.

Program of Work:
1. To maintain the proposed revised Dictionary until it is authorized for release to the printers.

2. To prepare photo-ready copies of updated workbooks from the Master Working Vocabulary at reasonable intervals.

3. To arrange for duplication and distribution of new workbooks as needed.

Chairman: Mr. C. K. Vanderhoof
Univac
P.O. Box 500
Blue Bell, Pa. 19422
W: (215) 646–9000, X3869

X3K52 (X3.5.2)

INTERNATIONAL VOCABULARY

Scope:
To prepare, present, and support the USA position in the development of a multilingual structured international vocabulary for computers, information processing, and related subjects.

Program of Work:
1. To provide comparative and multilingual vocabularies as working documents.

2. To provide comments and positions concerning papers submitted by ISO/TC97/SC 1 and member countries.

3. To provide comments on the format and content of the ISO/TC 1/SC 1 documents.

4. To provide tutorial papers on international vocabulary matters.

5. To participate in meetings of international standardization bodies.

6. To provide a library of information processing vocabularies, manuals, and related documents in several languages for the use of X3 and its subgroups.

7. To establish and recommend relationships among vocabulary entries where appropriate.

8. To classify and code the terms contained in the international vocabulary and associated working papers.

9. To document and maintain the X3.5.2 vocabulary structure.

Study Projects:
27 International Standards Multilingual Vocabulary for Information Processing

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X3K53 (X3.5.3)

GENERAL DICTIONARY

Scope:
To develop an American National Information Processing Dictionary for computers and information processing.

Program of Work:
1. To solicit and review comments concerning computer and information processing dictionary matters.

2. To submit material for inclusion in the Master Working Vocabulary.

3. To establish and recommend relationships among Master Working Vocabulary entries where appropriate.

4. To classify and code terms contained in proposed revisions of the Master Working Vocabulary and the Dictionary.

Study Projects:
25 ANS Vocabulary for Information Processing (X3.12–1970)—terminated
26 American National Dictionary for Information Processing

Chairman: Mr. C. K. Vanderhoof
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X3K6 (X3.6.6)

NETWORK-ORIENTED PROJECT MANAGEMENT

Scope:
To formulate and propose standard characteristics and properties of network orientation systems (including various fields of network applications including PERT and CPM.)

Program of Work:
1. Select working group chairman and reorganize.
2. Review scope and establish specific areas and work plan schedule.
3. Present plan of work to X3.6.
4. Develop work paper and present to X3.6 for ballot.
5. Present proposed standard to X3 for ballot and publication.

Study Projects:
31 Network Glossary
32 Networking Standards
33 Simulation-Oriented Network Glossary
34 Extract of No. 31 for INTERNET
35 Network-Users Questionnaire Review
36 Network-Oriented Computer Systems Guide

Chairman: Mr. Ralph C. Pace
Management Sciences Division
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Federal Participants

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Ad Hoc/Computer System Simulation
Mr. Robert J. Lambird, (CH), Department of Commerce, Census

X3L2 (X3.2)

CHARACTER CODES

Scope:
Standardization of coded character sets, input/output media (except OCR, MICR, and transmission) including code representation, recording formats, and format indicators and those characteristics of input/output equipment as required to interchange media between systems and equipment. (Not yet revised)

Study Projects:
1 Eight-bit code
2 Code Extension Procedures
3 Graphic Subsets
4 Control Codes (col. 8–9) for 8-bit sets
5 Graphics (col. 10–15) for 8-bit sets
6 Graphics for control codes
7 Rules for Definition of 4-bit subsets
8 Packed Decimal and Binary Representation Candidates for Registry:
9 RS244
10 RS358
11 Fractions in ASCII
12 Maintenance of ASCII
13 Code Registration Procedures
14 Code Practices Manual
15 Guidelines for Font Design

Chairman: Mr. Eric H. Clamons
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Mr. John L. Little, (P), Department of Commerce, NBS
Col. W. F. Luebbert, (A), Department of Defense, Army
Mrs. Lucia J. Rather, (P), Library of Congress
Mr. Robert E. Rountree, (L), Department of Commerce, NBS
Mr. Harry S. White, Jr., (L), Department of Commerce, NBS

X3L21 (X3.2F)

TRANSITION TO ASCII

Scope:
The scope of X3.2F is to study the transition to a more comprehensive usage of USA standard codes and media. Included are:
1. Identification of:
   a. The current environment(s)
   b. The target environment
   c. Aspects of transition from the current to target environment.

2. Selection of those areas which pose problems.

3. Development of a transition phase model.

4. Recommend actions for development of:
   a. Standards where appropriate
   b. Suggested user practices.

Program of Work:
1. Define Concepts and List the Measurable Characteristics for Mutual Understanding
   a. Define the concept of "Interchange"
   b. Define the concept of "Interchange Situations"
   c. Identify those characteristics of systems which are pertinent to "Interchange", e.g., Application Program, Application Program Language, Compiler, Operating System, Subroutine Library, Equipment (especially available media)
   d. Classify "Interchange Situations"—Classification factors include but are not limited to: Frequency/Volume, Nature of Data, Mutual knowledge of system characteristics, Probability, Medium. Classifications may be, e.g., Dissemination, Work Sharing, Backup, Conversion, Reporting.

2. Identify Environments
   a. The Current Environment(s)
   b. The Target Environment(s)

3. Measure Characteristics of Environments, e.g.,
   a. Data Representations and Forms
   b. Intermixing of These
   c. Processing Techniques
   d. Data Transmission
   e. Collating Sequence

4. Define Problem Areas in Transition

5. Develop Transition Phase models

6. Recommend Standards Projects
   a. Prescribe Levels of Complexity for the Interchange Code Standard
   b. New Standards

7. Recommend Publication of Guidance to Users and Implementors.

Study Projects:
40 Interchangeable Data Files
41 Interchange of Programs
42 Collating Sequence

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Federal Participants

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Mr. Walter A. Magee, (O), Office of Management and Budget

X3L5 (X3.2.5)

DATA FORMATS, RELATED SETS, AND APPLICATIONS

Scope:
1. Standardization of the labels that identify the disc and the existence of files and records as well as any other software generated labels that are necessary in order to assure proper access by the user.

2. To standardize the method of representing a numeric value on various input/output media used in information interchange.

3. To propose features and elements representing enhancements to the standards as well as proposed levels of adherence where these additional features and elements are not in contradiction with those already in the standards.

Program of Work:
1. a. Survey usage of the interchange environment.
b. Circumstances under which disc pack interchange takes place.
c Determine level of interchange to be standardized.
d. Select items to provide predetermined level of interchange.
(1) Items suitable for USA standardization
(2) Elements required for processing as related to the file characteristics.
(3) Make distinction between processing information and interchange information related to file characteristics.
(4) Consider hardware characteristics which are interwoven with file structure and file handling.
e. Consider linkage from magnetic tapes to disc packs to other storage media.

2. a. Itemize accepted number formats used in USASI approved standard programming languages.
b. Determine a number format that is in most common use among programming languages as well as most common formats with respect to input/output media.
c. Establish liaison with USASI language programming task groups to determine programming effects of changing existing formats and to develop a repertoire.
d. Propose a standard that is consistent with programming language techniques and reasonably conforms to existing format standards on input/output media.

3. a. Itemize those elements and functions expressed by the membership that should be contained in a proposed enhancement.
b. Prepare justification and rebuttal on each of these elements and functions and forward the documentation to the groups in ECMA and ISO that have been established to participate in this activity.
c. Establish justification for defining levels of standardization with the documentation of this area, and send to ECMA and ISO for agreement or rebuttal.

Study Projects:
37 Character Representation for Numeric Values Transmitted or Recorded on Media for Information Interchange
38 Magnetic Tape Labels and File Formats for Information Interchange (X3.27–1969) Enhancement
39 Labels, Control Blocks, and Data Formats for Removable Disc Packs in Information Interchange

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Federal Participants

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X3L8 (X3.8)

REPRESENTATIONS OF DATA ELEMENTS

Scope:
1. To develop standards for (1) describing the representations of data elements involved in data interchange; and (2) representing data elements of common interest, such as the elements concerned with the representations of times, locations, individuals, organizations and materials.

2. To develop recommended procedures, criteria, and guidelines in order to provide an organized approach to the standardization of the representations of data elements.

Program of Work:
1. To develop recommended procedures, and criteria for the development, maintenance, issuance, and use of American National Standards for representations of data elements.

2. To develop proposed standards for the following items:
a. Representation of time elements to include dates, times, and time zones.
b. Identification of organizations, individuals, and accounts to include standards for name formatting.
c. Representations for States, Counties, Places, and Congressional Districts of the United States, Countries of the World and their Subdivisions, Shipping and Mailing Addresses, and Point Locations.
d. Representations for quantitative numeric expressions.

Study Projects:
44 Quantitative Numeric Expressions
45 Units of Measurement
46 Units of Issue
82 Abbreviation of Units (SI) for Limited Character Sets. (ISO)
83 Representation of Calendar Date
84 Representation of Time Elements
85 Representation of Universal Time and Time Zones

86 Identifiers for Individuals
87 Identifiers for Organizations
88 Identifiers for Accounts
89 Name Formatting
90 Codes for States of US
91 Codes for Counties of States of US
92 Codes for Cities, Towns, Places of US
93 Codes for Point Locations in US
94 Codes for Congressional Districts
95 Representation of Mailing and Shipping Addresses
96 Codes for Countries of the World
97 Codes for Subdivisions of Countries
98 Codes for Continents and Water Areas

Chairman: Mr. Harry S. White, Jr.
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Mr. Sol Dolleck, (O), Department of Commerce, Census
Mr. C. L. Eadie, (P), General Services Administration
Mr. James W. Gillespie, (A), Department of Defense, Navy
Mr. Charles J. Kenny, (P), US Civil Service Commission
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Mr. Thornton J. Parker III, (O), Office of Management and Budget
Mr. Bernard J. Radack, (P), Department of the Treasury, IRS
Mr. William B. Robertson, (P), Department of Defense, OSD
Mr. Delbert Shoemaker, (A), General Services Administration
Mr. Richard G. Shook, (P), Atomic Energy Commission
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X3L81 (X3.8.1)

DATA STANDARDIZATION CRITERIA

Scope:
To develop recommended procedures and criteria for the development, maintenance, issuance, and use of American National Standards for representations of data elements.

Program of Work:
1. Draft guidelines for the development of standard representations of data elements.

2. As required, the development of uniform terms and definitions not available in the ANS Vocabulary or Dictionary.

3. If required, development of recommendations on publication and distribution of standard representation of data elements.

Study Projects:
43 Guidelines for the development of Stand- and Representation of data elements

Chairman: Mr. Arthur R. Blum
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X3L82 (X3.8.2)

TIME DESIGNATIONS

Scope:
Develop data standards for time, point, and time intervals.

Program of Work:
Development of data standards for representation of year, day of year, week of year, month of year, quarter of year, Julian Day number, time (hour, minutes, seconds, and Time Zone), and time intervals.

Study Projects:
83 Representation of Calendar Dates
84 Representation of Time Elements
85 Representation of Universal Time and Time Zones

Chairman: Mr. J. W. Gillespie
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X3L83 (X3.8.3)

INDIVIDUAL AND BUSINESS IDENTIFICATIONS

Scope:
Development of data standards for the identification of individuals and organizations for data interchange.

Program of Work:
Determination of all the elements required to uniquely identify individuals and organizations for purposes of assignment of unique codes. (The identification is required for the purpose of assigning unique codes. It may also be used in lieu of the standard code, when such code is not available.

Study Projects:
86 Standard Identification Code for Individuals
87 Standard Identification Code for Organizations
88 Standard Format for Individual Names
89 Standard Format for Organization Names

Chairman: Miss Sheila M. Smythe
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Mr. Bernard J. Radack, (P), Department of the Treasury, IRS
Mr. Walter Schuler, (P), Dept. of Health, Education and Welfare, Vital Statistics
Mr. Langston A. Spell, (P), Dept. of Transportation, NHSB
Mr. John R. Staklo, (P), Department of Defense, OSD
Mr. B. H. Steacy, (A), Department of Defense, Navy
Mr. Walter Stender, (P), General Services Administration, NARS

X3L84 (X3.8.4)

GEOGRAPHIC UNITS

Scope:
Development of data standards for representing geographical and geopolitical entities.

Program of Work:
Development of standard codes for the States and counties of the United States. In addition, continue liaison with the Federal Government Task Forces in the matters of countries of the world, and place codes.

Study Projects:
90 Codes for States of U.S.
91 Codes for Counties of States of U.S.
92 Codes for Cities, Towns, Places of U.S.
93 Codes for Point Locations in U.S.
94 Codes for Congressional Districts
95 Representation of Mailing and Shipping Addresses
96 Codes for Countries of the World
97 Codes for Subdivisions or Countries
98 Codes for Continents and Water Areas
99 Format Descriptions

Chairman: Mr. J. J. Robinson
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Mr. John P. Croke, (A), General Services Administration
Mr. J. E. Finlay, (P), Post Office Department
Mr. Frank Hargy, (P), General Services Administration
Mr. Henry Herz, (A), Department of Defense, OSD
Mr. Terry McIntyre, (P), Department of State
Mrs. Hazel E. McEwen, (P), Department of Commerce, NBS
Mr. William B. Robertson, (P), Department of Defense, OSD
Mr. Frank J. Tagler, (A), Department of Defense, Navy
Mr. Harley Unger, (P), Department of Transportation
Mr. Henry D. Walker, (P), Department of the Interior

X3L86 (X3.8.6)

QUANTITATIVE EXPRESSIONS

Scope:
The development of data standards for representing quantitative expressions and units of measure.

Program of Work:
1. Review and prepare recommendations on German working paper.

2. Development of draft proposed USA standards for representing "quantitative expressions."

3. Development of draft proposed USA standards for representing "units of measure."

4. Development of proposed USA standards for representing "units of issue."

Study Projects:
44 Quantitative Numeric Expressions Standard
45 Units of Measurement Standard
46 Units of Issue Standard
82 Abbreviations of Units (SI) for Limited Character Sets (ISO).

Chairman: Mr. Kevin F. Quinn
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Federal Participants

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Mr. William B. Robertson, (A), Department of Defense, OSD
Miss Corrine C. Stockwell, (P), General Services Administration

X3S3 (X3.3)

DATA TRANSMISSION

Scope:
Determine and define the operational characteristics governing the performance of digital data generating and receiving systems combined with communication systems.

Chairman: Mr. A. H. Stillman
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Federal Participants

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Mr. Harold J. Crowley, (P), Department of Defense, USAF
Mr. George Hopping, (P), General Services Administration
Maj. Richard Kuhr, (A), Department of Defense, DCA
Mr. Gerald C. Schutz, (P), Department of Transportation
Mr. Thomas M. Shimabukuro, (A), Department of Defense, DCA
Mr. Delbert Shoemaker, (L), General Services Administration
Mr. Paul D. Simpson, (A), General Services Administration
Mr. A. Hotvedt, (A), National Communications System
Mr. William F. Spanke, (P), National Communications System
Mr. George W. White, (A), National Communications System

X3S33 (X3.3.3)

DATA COMMUNICATIONS FORMATS

Scope:
1. Define formats for Data Communication of bits within characters and of characters within a hierarchy of groups and recommend standards where appropriate.

2. Define functional control requirements and procedures for data control of a data link and recommend standards where appropriate.

Program of Work:
1. Prepare a tutorial paper on Data Communication Heading Formats on simple systems as well as complex systems, and on direct transmission as well as store-and-forward transmission systems. A proposed standard will be written if it is determined to be desirable and necessary.

2. Prepare a proposed standard for Message Heading Format for Interchange of Data in ASCII.

Study Projects:
47 Heading Format for Data Transmission

Chairman: Mr. W. F. Emmons
IBM Corporation
Systems Development Division
Box 12275
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Mr. William J. Retzback, (P), Department of Defense, DCA
Mr. Warren Spurr, (A), National Communications System
Mr. R. C. Tannenbaum, (A), National Communications System
Mr. G. W. White, (P), National Communications System

X3S34 (X3.3.4)

DATA COMMUNICATION CONTROL PROCEDURES

Scope:
Prepare a USA Standard for data communications control procedures.

Study Projects:
48 Data Communications Control Procedures in ASCII
49 Code Independent Control Procedures
50 Network Control Procedures

Chairman: Mr. Stanley R. Rosenblum
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Federal Participants

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Mr. George Hopping, (A), General Services Administration
Mr. P. D. Simpson, (P), General Services Administration
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Mr. Warren Spurr, (A), National Communications System
Mr. R. C. Tannenbaum, (P), National Communications System
Mr. G. W. White, (A), National Communications System

X3S35 (X3.3.5)

SYSTEM PERFORMANCE

Scope:
Define the nomenclature, presentation, and measurement of those characteristics which determine the performance of general purpose digital data communication systems, and develop standards where appropriate.

Program of Work:
1. Complete the pANS "Determination of Data Communication System Performance."

2. Analyze and assess the impact of new or additional control procedure categories on above pANS.

3. Investigate suitable extensions to the initial standard for coverage at mult link and more complex system configurations.

4. Insure proper liaison with other U.S. and foreign standards committees through the respective coordination groups.

Study Projects:
28 Determination of Data Communication Systems Performance

Chairman: Mr. Rolf Kerker
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13430 N. Black Canyon Hwy.
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Federal Participants

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Mr. Donald D. Wilson, (A), National Aeronautics and Space Administration
Mr. J. Pape, (A), Department of Defense, USAF

X3S36 (X3.3.6)

DIGITAL DATA TRANSMISSION SPEEDS

Scope:
Define digital data signaling rates at the interface between data terminal equipment and data communication equipment and recommend standards where appropriate.

Program of Work:
The present program of work is concerned with the subject of wideband data transmission signaling rates. The task group has reviewed this subject periodically over the past four or more years, but has been unable to recommend a standard previously due to a general lack of applicable data. Due to the recent increase of activity in this area, it now appears that we may have sufficient data on which to recommend a standard in the near future. The work of this task group will also be coordinated with the EIA Committee working on wideband interface characteristics.

Study Projects:
51 Wideband Data Signaling Speeds

Chairman: Mr. Harold J. Crowley
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Federal Participants

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Mr. A. Hotvedt, (P), National Communications System
Mr. G. W. White, (A), National Communications System

X3T9 (X3.9)
I/O INTERFACE STANDARDS

Scope:
To identify, define, and where feasible and practicable, recommend standards for the significant logical, physical, and electrical interface parameters (excluding interfaces between data processing terminal equipment and data communication facilities) to provide improved effectiveness by interconnection and compatibility of central data processing equipment, control units, and input/output devices such as tape drives (both magnetic and paper), card readers and punches, printers, auxiliary memories, and multiplexors. The purpose of this identification and definitions will be to develop standards for the significant logical, physical, and electrical parameters of I/O interface(s).

Program of Work:
1. Study equipment system philosophies with goal of establishing basic rules for interface specification(s).
   a. List Physical, Operational, Hardware, Software Implications and Installation and Maintenance factors which should be considered in development of these basic rules.
   b. Evaluate these factors and select those applicable to the interface.
   c. Examine implementations of these factors for commonality.
2. Determine level(s) of interface standardization feasible and practicable.
3. Collect and examine relevant information on such things as existing interfaces and standardization activities.
4. Prepare standards proposals.

Study Projects:
52 Channel Interface—Functional
53 Channel Interface—Electrical
54 Channel Interface—Mechanical

Chairman: Mr. Glen E. Poorte
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Mr. Paul M. Robinson, Jr., (P), Department of Defense, Navy
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5.2.2. ANSI Standards Committee X4

5.2.2.1. Committee X4 Organizations and Federal Participants

X4

OFFICE MACHINES

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Mr. Victor G. Kehler, (P), Department of Defense, USAF

X4–A1—Typewriters

Chairman: Mr. R. Haney, Chairman

X4–A2—Adding Machines and Calculators

Chairman: Mr. V. S. Johnston

X4–A3—Accounting Machines and Cash Registers

Chairman: Mr. H. M. Miller

X4–A5—Duplicating, Reproducing and Copying Machines

Chairman: Mr. R. Kaspar

X4–A6—Dictating Machines

Chairman: Mr. F. Dibble

X4–A7—Basic Paper Layout/Forms

Chairman: Mr. R. Fortune

X4–A8—Electrical Characteristics for Office Machines

Chairman: Mr. R. Wayman

Federal Participants

Mr. Philip D. Shupe, (P), Department of Commerce, NBS

X4-A9—Keyboard Arrangements

Chairman: Mr. L. Avanzino

Federal Participants

Mr. Lloyd M. Berstein, (P), Department of Transportation, FAA
Mr. Walter Dickerson, (P), Department of Agriculture
Mr. David C. Friedman, (P), Department of Commerce, NBS
Mr. William Huf, (P), Department of Defense, Navy
Mr. David Peters, (P), General Services Administration
Mr. Edmund Trione, (A), General Services Administration

X4-A10—Addressing and Mailing Machines

Chairman: Mr. E. Harvey

X4-A11—Credit Card Standardization

Chairman: Mr. C. T. Deere

Federal Participants

Mr. Robert Cunningham, (P), Department of Transportation
Mr. David C. Friedman, (P), Department of Commerce, NBS
Mr. Hal Harriman, (P), Department of Transportation
Mr. Bernard J. Radack, (P), Department of the Treasury, IRS

5.2.3. ANSI Standards Committee Z39

5.2.3.1. Committee Z39 Organizations and Federal Participants

Z39

LIBRARY WORK, DOCUMENTATION, AND RELATED PUBLISHING PRACTICES

The American National Standards Institute, Inc., Standards Committee Z39 on Library Work, Documentation, and Related Publishing Practices is sponsored by the Council of National Library Associations to develop standards for concepts, definitions, terminology, letters and signs, practices, and methods in the fields of library work in the preparation and utilization of documents, and in those aspects of publishing that affect library methods and use.

Chairman: Dr. Jerold Orne
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Chapel Hill, North Carolina 27514

Federal Participants

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Mr. Logan O. Cowgill, (A), Department of the Interior
Mrs. Madeline Henderson, (P), Department of Commerce, NBS
Mr. Raymond A. Jensen, (P), Department of the Interior
Mr. Robert Klassen, (P), Dept. of Health, Education and Welfare, Office of Education
Mr. Mitchell A. Krasny, (A), Department of Commerce, CFSTI
Mr. Hubert E. Sauter, (P), Department of Commerce, CFSTI
Mr. William J. Welsh, (P), Library of Congress

Z39/SC 1—Program

Chairman: Mr. James L. Wood, Chemical Abstracts Service Library

Z39/SC 2—MACHINE INPUT RECORDS

Chairman: Mrs. Henriette D. Avram
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Federal Participants

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Mr. Kay D. Guiles, (P), Library of Congress
Mr. Abraham Lebowitz, (P), Department of Agriculture, NAL
Mr. Michael Keplinger, (P), Department of Commerce, NBS

Z39/SC 3—PERIODICAL TITLE ABBREVIATIONS

Chairman: Mr. James L. Wood, Chemical Abstracts Service Library

Federal Participants

Miss Clara Fox, (P), Atomic Energy Commission

Z39/SC 4—BIBLIOGRAPHIC REFERENCES

Chairman: Dr. Maurice Tauber, Columbia University School of Library Service

Z39/SC 5—TRANSLITERATION

Chairman: Dr. Jerrold Orne, University of North Carolina Library

Z39/SC 6—ABSTRACTS

Chairman: Mr. Ben H. Weil, Esso Research and Engineering Company

Z39/SC 8—PROOF CORRECTIONS

Chairman: Mr. Bruce Young, University of Chicago Press

Z39/SC 9—TERMINOLOGY

Chairman: Mr. Patrick D. J. Rae, Parkinson Information Service

Federal Participants

Mr. Robert R. Freeman, (P), Department of Commerce, ESSA

Z39/SC 13—TRADE CATALOGS AND DIRECTORIES

Chairman: Mr. Karl Baer, National Housing Center Library

Z39/SC 17—STANDARD BOOK NUMBERING

Co-Chairmen: Emery Koltay, R. R. Bowker Company and Robert W. Frase, American Book Publishers Council

Z39/SC 19—BOOK PUBLISHERS ADVERTISING

Chairman: Ellis Mount, Engineering Library, Columbia University

Z39/SC 20—STANDARD SERIAL CODING

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Mr. Paul R. Reimers, (P), Library of Congress

Z39/SC 21—TITLE LEAVES OF A BOOK

Chairman: Mrs. Anne J. Richter

Z39/SC 22—LIBRARY MATERIALS PRICE INDEXES

Chairman: William H. Kurth, Washington University Libraries

Z39/SC 24—REPORT LITERATURE FORMAT

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Z39/SC 25—THESAURUS RULES AND CONVENTIONS

Chairman: Mr. Frank Y. Speight

Z39/SC 26—PREPARATION OF SCIENTIFIC PAPERS

Chairman: Dr. F. Peter Woodford, Rockefeller University

Z39/SC 27—IDENTIFICATION CODES FOR COUNTRIES, LANGUAGES, PUBLISHERS, AREAS AND DATES

Chairman: Miss Patricia Parker
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Washington, D.C. 20540

Federal Participants

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Miss Patricia Parker, (CH), Library of Congress
Mr. Thornton J. Parker III, (O), Office of Management and Budget

Z39/SC 28—GUIDE FOR REFEREES OF JOURNAL ARTICLES

Chairman: Dr. Karl Heumann, Federation of American Societies for Experimental Biology

Z39/SC 29—PUBLICITY AND PROMOTION

Chairman: Mr. James L. Olsen, Jr.
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Z39/SC 30—IDENTIFICATION CODE FOR LIBRARIES AND BOOKDEALERS

Co-Chairmen: Mr. Joseph Eisner, Association of New York Libraries for Technical Services; and Mr. Russell Reynolds, National Association of College Stores, Inc.

5.3. International Organization for Standardization (ISO)

In the development of voluntary national standards for information processing, NBS is responsible for monitoring and coordinating Federal government participation on the various subcommittees and task groups of the American National Standards Institute (ANSI) and other industry standardization bodies. ANSI provides the channel through which American interests can participate in the activities of international standardization, which are becoming as important as national standardization activities. On many occasions, government participants are requested to consider international proposals and represent the interests of the United States on various standardization groups of the International Organization for Standardization. Also, government agencies may be queried as to the appropriateness of selected international proposals. Of particular importance to the information processing community is the work being carried on by ISO and its Technical Committee 97 (Computers and Information Processing). A review of ISO's activities in this area should be of interest to the entire information processing community.

5.3.1. Organization and Function of ISO

ISO was established in 1947 to promote the development of standards in order to facilitate international exchange of goods and services, and to develop mutual cooperation in areas of intellectual, scientific, technological, and economic activity.

Its objectives, as specified in its constitution, are: ". . . to facilitate the coordination and unification of the standards of Member Bodies." In connection with this goal, ISO may "organize the exchange of information regarding the work carried out by each Member Body . . . , set forth principles for the guidance of Member Bodies in their work . . . , cooperate with other international organizations dealing with related questions . . . , set up international standards provided, in each case, no Member Body dissents."

Present membership in ISO includes 54 Member Bodies. A Member Body is an organization of an individual Nation that best represents the standardization activities of its Nation. Only one such body for each country can be an ISO Member Body. The ISO Member Body that represents the United States is the American National Standards Institute (ANSI).

The operations of the Organization are directed by the ISO Council, which consists of the President, currently Francis L. LaQue, and representatives of 14 Member Bodies. An Executive Committee, composed of the Vice-President and seven Member-Body representatives, supervises the activities of the Central Secretariat and is responsible to the Council.

The principal administrative officer of the Organization is the Secretary-General, who is elected by the Council and is in charge of the Central Secretariat. This post is currently held by Olle Sturen, Sweden. The Secretary-General ensures liaison between Member Bodies and the Council, regulates expenditures, and, in general, represents ISO in its relations with other international organizations.

As coordinator of the activities of the Technical Committees, the Secretary General directs the work of Members and Committees, informs Member Bodies and the Council of the work carried out by Committees, and informs the Committees of activities of other international organizations in related fields.

The standardization work of ISO is accomplished by Technical Committees. Any ISO Member Body or any organization outside ISO may request the study of a technical subject. If the study is approved by a majority, and at least five Member Bodies are willing to take an active part, a Technical Committee is established by the Council.

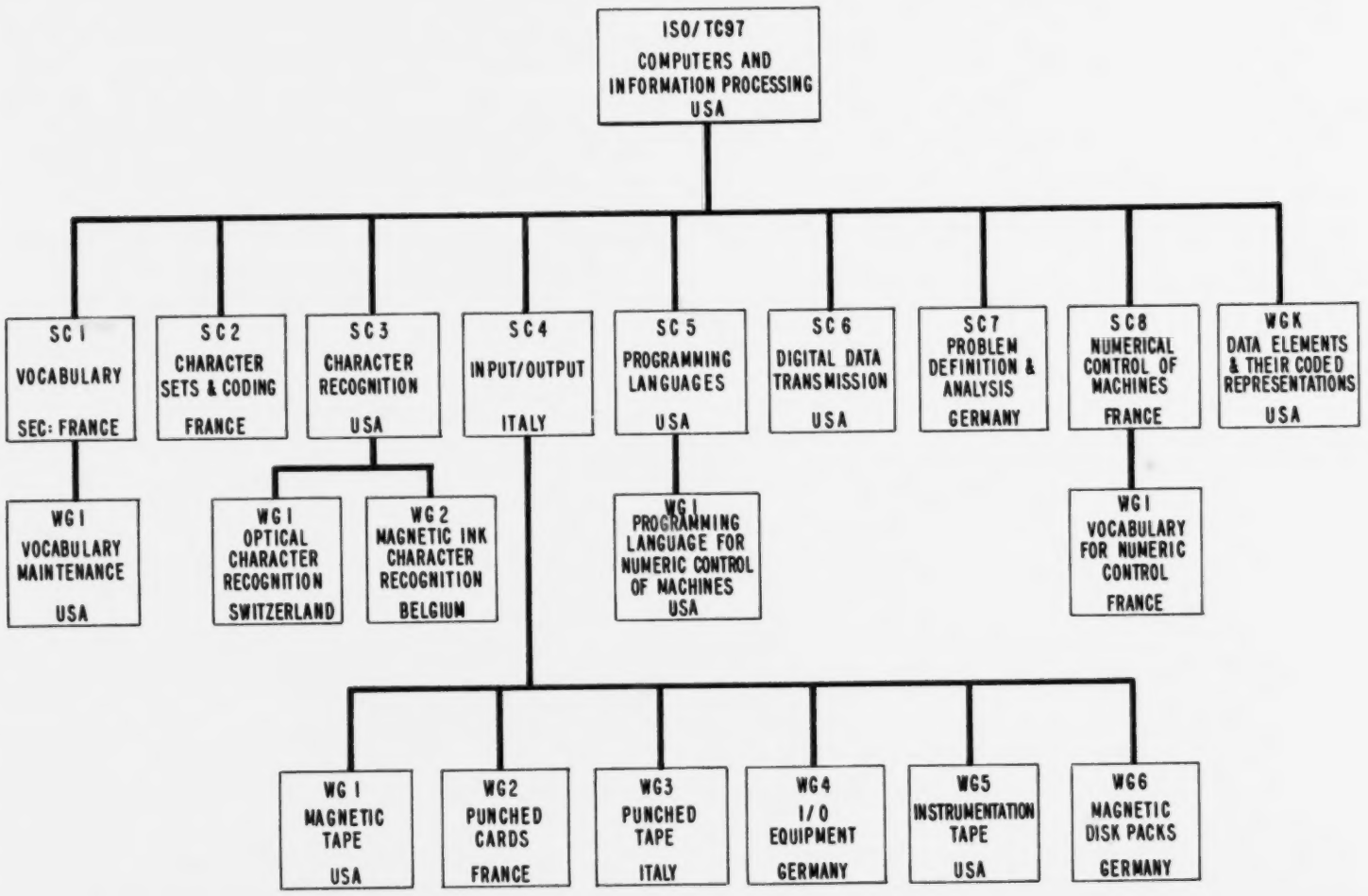
For each Committee the Council designates one Member Body to act impartially as a Secretariat. This Member Body also has its own delegation in the Technical Committee with the same status as other participating Member Bodies. The Secretariat is responsible for the satisfactory conduct of the Technical Committee's work and annually reports to the Council.

Currently, over 130 Technical Committees have been established. Their activities cover most technical areas, with the exception of electricity. All matters of an electro-technical nature are considered by the International Electro-technical Commission (IEC), which is affiliated with ISO.

The scope of each Technical Committee is precisely defined and can be altered only with the approval of the ISO Council. Within that scope, each Technical Committee determines its own program of work. Members who take an active part in the work of a Technical Committee are known as (P) Members (participating) and have the right to vote. Members who wish only to be kept informed of the Committee's work are called (O) Members (observers) and may not vote.

Technical Committees may establish Sub-Committees to study items on the Committee's work program. Working Groups are set up under Technical Committees and Sub-Committees as required. Reports of Working Groups and Sub-Committees are normally in the form of preliminary draft proposals.

ISO/TC 97 ORGANIZATION CHART



Draft proposals intended to become ISO Recommendations are submitted to the (P) Members of a Technical Committee for consideration. Those receiving substantial support are registered by the Central Secretariat as Draft ISO Recommendations and circulated to the Committee's (P) Members for final letter ballot and to all ISO Member Bodies for approval. A Draft ISO Recommendation, adopted by a majority of the (P) Members and approved by 60 percent of all ISO Member Bodies, is submitted to the ISO Council for acceptance as an ISO Recommendation. ISO Recommendations are published by the Central Secretariat for use of Member Bodies in facilitating standardization in their respective countries.

5.3.2. ISO/TC 97 (Computers and Information Processing)

Technical Committee ISO/TC 97 is responsible for developing standards recommendations relating to Computers and Information Processing. This Committee's development work is accomplished through the efforts of eight Sub-Committees and twelve Working Groups.

Members participating at the Committee, Sub-Committee and Working Group levels of ISO/TC 97 include the following countries:

(P) Members

Australia	Germany	Rumania
Brazil	Italy	Sweden
Canada	Japan	Switzerland
Czechoslovakia	Netherlands	United Kingdom
Denmark	Poland	USA
France	Spain	USSR

(O) Members

Austria	India	Pakistan
Belgium	Iran	Portugal
Chile	Ireland	Republic of South Africa
Colombia	Israel	
Greece	New Zealand	Turkey
Hungary	Norway	Yugoslavia

To ensure coordination of work on matters of common interest, ISO/TC 97 has established liaison with other ISO and IEC Technical Committees, including ISO/TC 6, Paper, Board, and

Pulps; ISO/TC 37, Terminology (Principles and Coordination; ISO/TC 39, Machine Tools; ISO/TC 46, Documentation; ISO/TC 68, Banking; ISO/TC 95, Office Machines; IEC/TC 44, Electrical Equipment of Machine Tools; and IEC/TC 53 Analogue Computing Equipment.

Also ISO/TC 97 has liaison with many International Organizations such as the European Computer Manufacturers Association (EC MA), International Federation of Information Processing (IFIP), Union Internationale des Telecommunications (UIT), International Radio Consultative Committee (CCIR), International Telegraph and Telephone Consultative Committee (CCITT), and Universal Postal Union (UPU).

In its role of developing standards for Computers and Information Processing, ISO/TC 97 has a defined scope of work as follows:

> Standardization of the terminology, problem description, programming languages, communications characteristics, input-output, and physical (non-electrical) characteristics of computers and data processing devices, equipments and systems.

The Sub-Committees and Working Groups within ISO/TC and the scope of work of each Sub-Committee are:

SC 1—Vocabulary
Scope: To provide a multilingual glossary for information processing systems and related subjects covered in the general scope of ISO/TC 97 and, where appropriate, abbreviations and letter symbols.
Working Group 1—Vocabulary Maintenance

SC 2—Character Sets and Coding
Scope: The standardization of character sets, character meanings, the grouping of character sets into information, coded representation and the identification of it for the interchange of information between data processing systems and associated equipments, also to report on the problems related to analog devices, taking into account the need for error checking.

SC 3—Character Recognition
Scope: The standardization of input and output character forms for the interchange of information between data processing equipments and associated equipments utilizing only humanly-legible printed character sets, i.e., character recognition.
Working Group 1—Optical Character Recognition
Working Group 2—Magnetic Ink Character Recognition

SC 4—Input-Output
Scope: The standardization of those physical characteristics of input-output media which are required for the interchange of digital and/or coded information among information processing systems and systems of associated equipment.
Working Group 1—Magnetic Tape
Working Group 2—Punched Cards
Working Group 3—Punched Tape
Working Group 4—Input-Output Equipment
Working Group 5—Instrumentation Tapes
Working Group 6—Magnetic Disk Packs

SC 5 Programming Languages
Scope: The standardization and specification of common programming languages and the characteristics of other software of broad utility, with provision of revision, expansion and strengthening, and for the definition and approval of test problems.
Working Group 1—Programming Languages for Numerical Control of Machines

SC 6—Digital Data Transmission
Scope: To determine and define the system parameters governing the operational action and reaction between communication systems and digital data generating and receiving systems.

SC 7—Problem Definition and Analysis
Scope: To establish appropriate standards on definition and analysis of information processing problems in order to define the means, the format, the context and other techniques which will provide a representation of these problems.

SC 8—Numerical Control of Machines
Scope: Any standardization problem concerning the numerical control of machines; this definition includes, among others, machine-tools, assembling machines, welding and torch-cutting machines, winding machines, drafting machines, inspection and sorting machines.
Working Group 1—Vocabulary

Working Group K—Data Elements and Their Coded Representation
Scope: The standardization of data elements and their coded representation to facilitate information interchange and data processing.

Fourteen ISO Recommendations relating to Computers and Information Processing have been developed through the efforts of ISO/TC 97 and have been approved by ISO Members.

Approved ISO Recommendations Relating to Computers and Information Processing

R	646–1967	6- and 7-bit Coded Character Sets for Information Processing Interchange
R	840–1968	Code for the Numerical Control of Machines. (Compatible with the ISO 7-bit Code)
R	841–1968	Axis and Motion Nomenclature for Numerically Controlled Machines
R	961–1969	Implementation of the 6-and 7-bit Coded Character Sets on 7-track 12.7 mm (½ in) Magnetic Tape
R	962–1969	Implementation of the 7-bit Coded Character Set on 9-track 12.7 mm (½ in) Magnetic Tape
R	963–1969	Guide for the Definition of 4-bit Character Sets derived from the ISO 7-bit Coded Character Set for Information Processing Interchange
R	1001–1969	Magnetic Tape Labeling and File Structure for Information Interchange

R 1004–1969	Print Specification for Magnetic Ink Character Recognition
R 1073–1969	Alphanumeric Character Sets for Optical Recognition
R 1056–1969	Punched Tape Block Formats for the Numerical Control of Machines —Coding of Preparatory Functions G and Miscellaneous Functions M
R 1058–1969	Punched Tape Variable Block Format for Positioning and Straight-Cut Numerically Controlled Machines
R 1059–1969	Punched Tape Fixed Block Format for Positioning and Straight-Cut Numerically Controlled Machines
R 1057–1969	Interchangeable Punched Tape Variable Block Format for Positioning and Straight-Cut Numerically Controlled Machines.
R 1028–1969	Flowchart Symbols for Information Processing

These ISO Recommendations are available from the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

6. Standards Committee Participation by Federal Government Agency

The names of the Federal Government participants listed below concerned with information processing standards activity at the Federal, National, and International levels have been submitted by Federal Departments and Agencies for this INDEX at the request of the National Bureau of Standards. Future changes in membership or membership information should be forwarded to the Office of Information Processing Standards, Center for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234 through the Agency Points of Contact (See section 5.1.4 for FIPS Contact).

Participating Member	Committee	Membership Status [1]
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Mr. Norbert Halloran	Interagency Committee on ADP	P
AGENCY FOR INTERNATIONAL DEVELOPMENT		
Mr. David M. Dale	Interagency Committee on ADP	P
ATOMIC ENERGY COMMISSION		
Mr. James T. Cape	Z39/SC 27—Identification Codes for Countries, Languages, Publishers, Areas and Dates	P
Miss Clara Fox	Z39/SC 3—Periodical Title Abbreviations	P
Dr. Ben S. Loeb	Z39/SC 24—Report Literature Format	P
Mr. Robert L. Mayer	FIPS TG-5—Federal Information Processing Vocabulary	A
	X3L8—Representations of Data Elements	A
	X3L81—Data Standardization Criteria	
Mr. M. Herbert Schwartz	Federal Information Processing Standards Coordinating and Advisory Committee	P
Mr. Richard G. Shook	Interagency Committee on ADP	P
	X3L8—Representations of Data Elements	P
	X3L81—Data Standardization Criteria	
CENTRAL INTELLIGENCE AGENCY		
Mr. James O. Emerson (FIIHC)	FIPS TG-5—Federal Information Processing Vocabulary	P
Mr. Philip B. Kennedy	Interagency Committee on ADP	
CIVIL AERONAUTICS BOARD		
Mr. Allan Craig	Interagency Committee on ADP	P
DEPARTMENT OF AGRICULTURE		
Mr. Chester S. Adell (ASCS)	X3A1—Optical Character Recognition (OCR)	P
Mr. Arthur T. Devlin	Interagency Committee on ADP	P
Mr. Walter A. Dickerson	X3A1—Optical Character Recognition (OCR)	P
	X4-A9—Keyboard Arrangements	P
Mr. Abraham Lebowitz	Z39/SC 2—Machine Input Records	P
Mr. L. S. Waters	FIPS TG-6—Computer Tape, Magnetic	

[1] P -Principal Member, A—Alternate, O—Observer, L—Liaison, CH—Chairman.

Participating Member	Committee	Membership Status [1]
	DEPARTMENT OF COMMERCE	
Dr. Donald E. Church (Census)	X3L84—Geographic Units	P
Mr. George E. Clark (NBS)	FIPS Coordinating and Advisory Committee	
	FIPS TG-2—Data Terminals and Data Interchange System Requirements	CH
	X3/SSC—Standards Steering Committee	P
	X3S3—Data Transmission	P
	X3S33—Data Communications Formats	P
	X3S34—Data Communications Control	P
Mr. Sol Dolleck (Census)	X3L8—Representations of Data Elements	O
Mr. G. Stanley Doore (ESSA)	FIPS TG-2—Data Terminals and Data Interchange System Requirements	
	FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques	
Dr. Blanton C. Duncan (NBS)	X3/SPARC/TEXT—Codes for Textual Data	CH
	X3L2—Character Codes	A
Mr. Art Ernst (NBS)	FIPS TG-6—Magnetic Tape, Computer	
Mr. H. R. Fletcher (Census)	X3J4—COBOL Standards	P
	X3J41—Surveys	CH
Mr. Robert R. Freeman (ESSA)	Z39/SC 9—Terminology	P
Mr. David C. Friedman (NBS)	X3A1—Optical Character Recognition (OCR)	P
	X3A12—Print Quality Specifications	P
	X4-A9—Keyboard Arrangements	P
	X4-A11—Credit Card Standardization	P
Dr. H. R. J. Grosch (NBS)	X3/IPSSB—Information Processing Systems Standards Board	P
Mr. John Halterman (Census)	FIPS TG-7—Magnetic Tape Labels for Information Interchange	
Dr. Joseph O. Harrison, Jr. (NBS)	FIPS Coordinating and Advisory Committee	CH
	X3/IPSSB—Information Processing Systems Standards Board	A
	X3—Computers and Information Processing	P
	X4—Office Machines	P
Mrs. Madeline Henderson (NBS)	Z39—Library Work, Documentation, and Related Publishing Practices	P
Mrs. Frances E. Holberton (NBS)	FIPS Coordinating and Advisory Committee	
	FIPS TG-7—Magnetic Tape Labels for Information Interchange	
	X3/SPARC/DOCN—Documentation	P
	X3J3—FORTRAN	P
	X3K1—Project Documentation	P
Mr. Philip S. Johnson (NBS)	FIPS Coordinating and Advisory Committee	
	FIPS TG-6—Magnetic Tapes, Computer	CH
	X3/SSC—Standards Steering Committee	P
	X3B1—Magnetic Tape	P
	X3B7—Interchangeable Magnetic Disk Media	P
Mr. Robert L. Johnson (OSC)	Interagency Committee on ADP	P
Mr. Michael Keplinger (NBS)	Z39/SC 2—Machine Input Records	P

Participating Member	Committee	Membership Status
Mr. Mitchell A. Krasny (CFSTI)	Z-39—Library Work, Documentation, and Related Publishing Practices	A
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	X3K6—Network-Oriented Project Documentation	P
	—Ad Hoc/Computer System Simulation	CH
Mr. John L. Little (NBS)	FIPS Coordinating and Advisory Committee	
	FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques	CH
	X3/SPARC/OSCL—Operating System Control Languages	P
	X3L2—Character Codes	P
	X3L21—Transition to ASCII	CH
Mr. Paul Mantek (NBS)	FIPS TG-6—Magnetic Tapes, Computer	A
	X3B1—Magnetic Tape	A
Mrs. Hazel E. McEwen (NBS)	X3L8—Representations of Data Elements	A
	X3L81—Data Standardization Criteria	P
	X3L84—Geographic Units	
Mr. Robert L. Mills (Census)	FIPS TG-2—Data Terminals and Data Interchange System Requirements	
	FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques	
Mr. Raymond T. Moore (NBS)	FIPS TG-2—Data Terminals and Data Interchange System Requirements	P
	X3S35—System Performance	
Mr. J. T. O'Neill (NBS)	FIPS Coordinating and Advisory Committee	P
	X3/SPARC/PERF—Performance Evaluation	O
Mrs. Elizabeth Parker (NBS)	X3J3—FORTRAN	A
Mr. Robert E. Rountree, Jr. (NBS)	X3J4—COBOL Standards	A
	X3J44—COBOL Standard Maintenance	L
	X3L2—Character Codes	
Mr. Hubert E. Sauter (CFSTI)	Z39—Library Work, Documentation and Related Publishing Practices	P
Mr. Philip D. Shupe (NBS)	X3B7—Interchangeable Magnetic Disk Media	P
	X4-A8—Electrical Characteristics for Office Machines	P
Miss Mary K. Stevens (NBS)	FIPS TG-5—Federal Information Processing Vocabulary	P
Miss Mabel V. Vickers (NBS)	X3J4—COBOL Standards	P
	X3J44—COBOL Standard Maintenance	
Miss Josephine L. Walkowicz (NBS)	FIPS Coordinating and Advisory Committee	CH
	FIPS TG-5—Federal Information Processing Vocabulary	P
	X3K5—Terminology and Glossary	
	ISO/TC 97/SC 1—Vocabulary	
Mr. Harry S. White, Jr. (NBS)	FIPS Coordinating and Advisory Committee	A
	X3—Computers and Information Processing	P
	X3/IAC—International Advisory Committee	
	X3/SPARC—Standards Planning and Requirements Committee	P
	X3/FDII—Format Description for Information Interchange	CH
	X3L8—Representations of Data Elements	CH
	X3L81—Data Standardization Criteria	P
	ISO/TC 97/WG K—Data Elements and Their Coded Representations	CH

Participating Member	Committee	Membership Status
Mr. Roy W. Worral (NBS)	X3A1—Optical Character Recognition (OCR)	A
	X3A12—Print Quality Specifications	A
	DEPARTMENT OF DEFENSE	
Mr. H. N. Acrivos (Navy)	X3L82--Time Designations	A
Mrs. Edna Anderson (USMC)	FIPS TG-5—Federal Information Processing Vocabulary	
Mr. H. Thomas Anderson (USAF)	X3A11—Font Design	P
Miss Mildred L. Bailey (OSD)	X3L8—Representations of Data Elements	A
	X3L81—Data Standardization Criteria	A
	X3L83—Individual & Business Identifications	A
	X3L86—Quantitative Expressions	P
Mr. George Baird (Navy)	X3J4—COBOL Standards	A
	X3J42—Compiler Feature Availability	A
	X3J44—COBOL Standard Maintenance	P
Mr. Alan R. Barnum (USAF)	X3/SPARC/OSCL—Operating System Control Languages	P
Mr. Joseph E. Bishop (USAF)	X3J4—COBOL Standards	P
Mr. Henry F. Burkhard (Army)	X3A1—Optical Character Recognition (OCR)	A
	X3A11—Font Design	A
Mr. Stephen Caine (Navy)	FIPS TG-6—Magnetic Tapes, Computer	
Mr. Lloyd W. Campbell (Army)	X3J3—FORTRAN	A
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Mr. Harold J. Crowley (USAF)	X3S3—Data Transmission	P
	X3S36—Digital Data Transmission Speeds	CH
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Mr. Richard Day (NSA)	FIPS TG-2—Data Terminals and Data Interchange System Requirements	
Mrs. Dorothy K. DeCost (Army)	X3L8—Representations of Data Elements	A
	X3L81—Data Standardization Criteria	A
Mr. William Douglas (NSA)	FIPS TG-2—Data Terminals and Data Interchange System Requirements	
Mr. Vincent Dovydaitis, Jr. (USAF)	X3S35—System Performance	P
Mr. Robert F. Early (Navy)	X3K6—Network-Oriented Project Management	P
Mr. David Eaton (Navy)	X3J3—FORTRAN	A
Lt. Roger Engelback (USAF)	X3/SPARC/JOVL—JOVIAL	A
Mr. Calvin Fleming (NSA)	FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques	
Mr. Richard Fredette (Navy)	X3J4—COBOL Standards	A
	X3J42—Compiler Feature Availability	P
	X3J43—COBOL Information Bulletin	CH
Mr. James Gillespie (Navy)	X3L8—Representations of Data Elements	A
	X3L81—Data Standardization Criteria	A
	X3L82—Time Designations	CH

Participating Member	Committee	Status Membership
Mr. James T. Givens (DIA)	X3L82—Time Designations	A
Mr. James G. Griffis (DCA)	X3S33—Data Communications Formats	A
	X3S34—Data Communications Control Procedures	P
	X3T9—I/O Interface Standards	A
Mr. Robert P. Griffith (USAF)	X3J7—APT	A
Mr. Gerald Gustafson (Navy)	FIPS TG-6—Magnetic Tape, Computer	
Mr. Robert Hegland (Navy)	X3/SPARC/DOCN—Documentation	P
Maj. Samuel P. Herod (USAF)	X3/SPARC/JOVL—JOVIAL	P
Mr. Henry A. Herz (OSD)	X3L82—Time Designations	P
	X3L84—Geographic Units	A
Mr. Stanley Homa (Army)	X3A1—Optical Character Recognition (OCR)	P
	X3A11—Font Design	P
Mr. William Huf (Navy)	FIPS TG-2—Data Terminals and Data Interchange System Requirements	P
	X3L2—Character Codes	P
	X4-A9—Keyboard Arrangements	P
Mr. Victor G. Kehler (USAF)	X4—Office Machines	A
Maj. Richard Kuhr (DCA)	X3S3—Data Transmission	A
Mr. E. W. Lahr (Navy)	X3T9—I/O Interface Standards	P
Miss Patricia Langendorf (USAF)	X3J1—Composite Language Development	A
	X3K5—Terminology and Glossary	P
	X3K53—General Dictionary	A
Col. W. F. Luebbert (USMA)	X3L2—Character Codes	P
Mr. B. V. Magee (Army)	X3B2—Perforated Tape	
Mr. Henry McDonough (NSA)	FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques	
Mr. Inman McElvy (NSA)	FIPS TG-6—Magnetic Tape, Computer	
Mr. Wharton A. McGreer (OSD)	X3/IPPSB—Information Processing Systems Standards Board	A
	X3—Computers and Information Processing	A
Mr. Albert N. McMahan (USAF)	FIPS TG-2—Data Terminals and Data Interchange System Requirements	A
	X3J4—COBOL Standards	CH
Mr. William D. Morgan (Army)	X3K3—Alphanumeric Presentation	A
Mr. J. Pape (USAF)	X3S35—System Performance	P
Mr. Bobbie J. Parkinson (USAF)	X3J7—APT	A
Mr. Oliver W. Parson (Navy)	X3/SPARC/DOCN—Documentation	
Mr. Sherwood Prescott (USMC)	FIPS TG-5—Federal Information Processing Vocabulary	
	FIPS TG-7—Magnetic Tape Labels for Information Interchange	

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	FIPS Coordinating and Advisory Committee	A
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Mr. Robert D. Rice (Navy)	FIPS TG-7—Magnetic Tape Labels for Information Interchange	
Mr. James N. Ridgell (USAF)	X3/SPARC/DOCN—Documentation	CH
Mr. William B. Robertson (OSD)	X3L8—Representations of Data Elements	P
	X3L81—Data Standardization Criteria	P
	X3L82—Time Designations	A
	X3L84—Geographic Units	P
	X3L86—Quantitative Expressions	A
Mr. Paul M. Robinson, Jr. (Navy)	X3T9—I/O Interface Standards	P
Mr. Thomas M. Shimabukuro (DCA)	FIPS TG-2—Data Terminals and Data Interchange System Requirements	
	X3S3—Data Transmission	A
Mr. C. Roger Shoch (Navy)	X3/SSC—Standards Steering Committee	P
	X3/SPARC/PERF—Performance Evaluation	P
	X3K3—Alphanumeric Presentation	P
Mr. Al Sorkowitz (Navy)	X3/SPARC JOVL—JOVIAL	CH
Mr. Edward L. Snider (Navy)	FIPS TG-2—Data Terminals and Data Interchange System Requirements	
Mr. John Staklo (OSD)	X3L83—Individual and Business Identifications	P
Mr. B. H. Steacy (Navy)	X3L83—Individual and Business Identifications	A
Maj. Oliver C. Stokes, Jr. (DCA)	X3A1—Optical Character Recognition (OCR)	A
	X3A11—Font Design	A
Mr. John L. Strain (Army)	X3J1—Composite Language Development	A
Mr. R. Strausberg (Navy)	X3K2—Alphanumeric Presentation	P
Mr. Stephen Stromick (USAF)	X3A11—Font Design	P
Mr. Frank J. Tagler (Navy)	X3L84—Geographic Units	A
Mr. Helmut E. Thiess (Navy)	Interagency Committee on ADP	P
	X3K5—Terminology and Glossary	P
	X3K52—International Vocabulary	CH
	X3K53—General Dictionary	A
	ISO/TC 97/SC 1—Vocabulary	P
	ISO/TC 97/SC 1/WG 1—Vocabulary Maintenance	P
Mr. George C. Thomas (DCA)	X3T9—I/O Interface Standards	A
Mr. J. D. Waggoner (Army)	X3J3—FORTRAN	P
Col. Joseph B. Warren (OSD)	FIPS Coordinating and Advisory Committee	P
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Mr. Robert E. White (DIA)	X3/SPARC/JOVL—JOVIAL	A
Dr. G. M. R. Winkler (Navy)	X3L82—Time Designations	A
Mr. Wayne Worrell (Army)	X3/SPARC/DOCN—Documentation X3K3—Alphanumeric Presentation	A A
Mr. George Zookolis (DCA)	X3S34—Data Communications Control Procedures	A
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Mr. Robert G. Cox	FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques X3L8—Representations of Data Elements	P
Mr. Herman E. Fey (SSA)	FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques FIPS TG-7—Magnetic Tape Labels for Information Interchange	
Mr. George Gallagher (SSA)	X3L83—Individual and Business Identifications	P
Mr. Robert Klassen (Office of Education)	Z–39—Library Work, Documentation and Related Publishing Practices	P
Mr. Daniel A. Lahn	FIPS TG-5—Federal Information Processing Vocabulary	
Mr. Lawrence Livingston (NLM)	Z39/SC 20—Standard Serial Coding	P
Mr. John Mayer (SSA)	X3L83—Individual and Business Identifications	A
Mr. Harry S. Mayhew (SSA)	X3A1—Optical Character Recognition (OCR)	P
Mr. Kenneth Morris	Interagency Committee on ADP	P
Mr. Joseph D. Naughton (NIH)	FIPS TG-2—Data Terminals and Data Interchange System Requirements FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques	
Dr. A. W. Pratt (NIH)	FIPS TG-5—Federal Information Processing Vocabulary	
Mr. Roy Rapp (SSA)	X3A1—Optical Character Recognition (OCR)	A
Mr. Walter Schuler (NDVS)	X3L83—Individual and Business Identifications	P
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Mr. Logan O. Cowgill	Z–39—Library Work, Documentation and Related Publishing Practices	A
Mr. Arthur Hopkins	FIPS TG-2—Data Terminals and Data Interchange System Requirements	

Participating Member	Committee	Membership Status
Mr. Raymond A. Jensen	Z-39—Library Work, Documentation and Related Publishing Practices	P
Mr. Henry D. Walker	X3L84—Geographic Units	P
	DEPARTMENT OF JUSTICE	
Mr. Larry Shute	Interagency Committee on ADP	P
	DEPARTMENT OF LABOR	
Mr. James W. Gray	Interagency Committee on ADP	P
Mr. Charles P. Morley	X3L8—Representations of Data Elements	P
	DEPARTMENT OF STATE	
Mr. Frank P. DiBlasi, Jr.	Interagency Committee on ADP	P
Mr. Terry McIntyre	X3L84—Geographic Units	P
	DEPARTMENT OF TRANSPORTATION	
Mr. Charles L. Allwine (NHSB)	X3L83—Individual and Business Identifications	A
Mr. Lloyd M. Berstein (FAA)	X4-A9—Keyboard Arrangements	P
Mr. Robert Cunningham, Jr. (USCG)	X4-A11—Credit Card Standardization	P
Mr. Jules B. DuPeza	Interagency Committee on ADP	P
	FIPS TG-5—Federal Information Processing Vocabulary	
Mr. Jack W. Grewell (FAA)	Z39/SC 24—Report Literature Format	CH
Mr. Hal Harriman	X4-A11—Credit Card Standardization	P
Mr. Gerald C. Schutz	FIPS TG-2—Data Terminals and Data Interchange System Requirements	
	X3S3—Data Transmission	P
	X3S35—System Performance	P
Mr. Langston A. Spell (NHSB)	X3L83—Individual and Business Identifications	P
Mr. Harley Unger	X3L84—Geographic Units	P
	DEPARTMENT OF THE TREASURY	
Mr. Bernard J. Radack	X3/SSC—Standards Steering Committee	P
	X3L8—Representations of Data Elements	P
	X3L83—Individual and Business Identifications	P
	X4-A11—Credit Card Standardization	P
Mr. Nicholas Schauer	Interagency Committee on ADP	P
Mr. Volney Taylor	FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques	
	DISTRICT OF COLUMBIA	
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	EXPORT-IMPORT BANK OF THE UNITED STATES	
Mr. J. Patrick Dugan	Interagency Committee on ADP	P
	FARM CREDIT ADMINISTRATION	
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Participating Member	Committee	Membership Status
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Mr. Nicholas J. Suszynski	Interagency Committee on ADP	P
	FEDERAL HOME LOAN BANK BOARD	
Mr. Thomas P. Wood	Interagency Committee on ADP	P
	FEDERAL MEDIATION AND CONCILIATION SERVICE	
Mr. L. E. Eady	Interagency Committee on ADP	P
Mrs. Sorine A. Preli	X3K1—Project Documentation	P
	FEDERAL POWER COMMISSION	
Mr. Richard E. Kear	Interagency Committee on ADP	P
	FEDERAL RESERVE BOARD	
Mr. Jerold E. Slocum	Interagency Committee on ADP	P
Mr. Richard S. Watt	X3/SPARC/DOCN—Documentation	P
	FEDERAL TRADE COMMISSION	
Mr. John A. Delaney	Interagency Committee on ADP	P
	GENERAL ACCOUNTING OFFICE	
Mr. Edward J. Mahoney	Interagency Committee on ADP	P
	GENERAL SERVICES ADMINISTRATION	
Mr. Norman Booth	FIPS TG-5—Federal Information Processing Vocabulary	
Mr. A. J. Burkhart (MSL)	FIPS TG-6—Magnetic Tape, Computer	
	X3B1—Magnetic Tape	CH
	ISO/TC 97/SC 4/WG 1—Magnetic Tape	P
	ISO/TC 97/SC 4/WG 5—Instrumentation Tape	P
Mr. Hugh Conrad	X4—Office Machines	
Mr. John P. Croke	X3L84—Geographic Units	A
Mr. Roger D. Daniero	FIPS TG-6—Magnetic Tape, Computer	
	X3B7—Interchangeable Magnetic Disk Media	A
Mr. J. L. DeProspero	X3B7—Interchangeable Magnetic Disk Media	A
Mr. W. F. Dietericks	X3B2—Perforated Tape	P
	X3B3—Punched Cards (Physical)	P
Mr. George W. Dodson, Jr.	Interagency Committee on ADP	P
	FIPS Coordinating and Advisory Committee	
	X3/IPSSB—Information Processing Systems Standards Board	P
Mr. Andrew E. Dziekan	FIPS TG-5—Federal Information Processing Vocabulary	
Mr. C. L. Eadie	X3L8—Representations of Data Elements	P
	X3L81—Data Standardization Criteria	P
Mr. John H. Eastman (MSL)	FIPS TG-6—Magnetic Tape, Computer	
	X3B1—Magnetic Tape	O
	X3B7—Interchangeable Magnetic Disk Media	P

Participating Member	Committee	Membership Status
Mr. Julius Fiori	FIPS TG-6—Magnetic Tape, Computer	
Mr. H. A. Harback	X3B1—Magnetic Tape	P
Mr. Frank R. Hargy	X3L84—Geographic Units	P
Mr. George Hopping	FIPS TG-2—Data Terminals and Data Interchange Systems Requirements	
	X3S3—Data Transmission	P
	X3S34—Data Communications Control Procedures	A
Mr. David Peters	X4-A9—Keyboard Arrangements	P
Mr. Jay E. Rice	X3—Computers and Information Processing	A
Mr. Gerald Rosenkrantz (NARS)	FIPS TG-7—Magnetic Tape Labels for Information Interchange	
Mr. Delbert Shoemaker	IPSSB—Information Processing Systems Standards Board	A
	FIPS TG-2—Data Terminals and Data Interchange Systems Requirements	
	X3—Computers and Information Processing	P
	X3B1—Magnetic Tape	O
	X3B7—Interchangeable Magnetic Disk Media	O
	X3K3—Alphanumeric Presentation	P
	X3L5—Data Formats, Related Sets and Applications	O
	X3L8—Representations of Data Elements	A
	X3L81—Data Standardization Criteria	A
	X3S3—Data Transmission	L
	X3T9—I/O Interface Standards	P
Mr. P. D. Simpson	FIPS TG-2—Data Terminals and Data Interchange Systems Requirements	
	X3S3—Data Transmission	A
	X3S34—Data Communications Control Procedures	P
Mr. Walter Stender (NARS)	X3L83—Individual and Business Identifications	P
Miss Corrine C. Stockwell	X3L86—Quantitative Expressions	P
Mr. Edmund Trione	X4-A9—Keyboard Arrangements	A
Mr. Sidney Weinstein	FIPS Coordinating and Advisory Committee	
Mr. Bruce F. Wellborn	FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques	
	GOVERNMENT PRINTING OFFICE	
Mr. Charles C. Lowe	Interagency Committee on ADP	P
	INTERSTATE COMMERCE COMMISSION	
Mr. Robert J. Hartel	Interagency Committee on ADP	
	LIBRARY OF CONGRESS	
Mrs. Henriette D. Avram	Z39/SC 2—Machine Input Records	CH
	ISO/TC 46/WG 4—Automation and Documentation	P
Mr. Fred Croxton	Z39/SC 20—Standard Serial Coding	CH
Mr. Kay D. Guiles	Z39/SC 2—Machine Input Records	P
Miss Patricia E. Parker	Z39/SC 27—Identification Codes for Countries, Languages, Publishers, Areas and Dates	CH
Mr. Herbert L. Peress	FIPS TG-7—Magnetic Tape Labels for Information Interchange	

Participating Member	Committee	Membership Status
Mrs. Lucia J. Rather	X3/SPARC/TEXT—Codes for Textual Data	P
	X3L2—Character Codes	
Mr. Paul R. Reimers	Interagency Committee on ADP	P
	Z39/SC 20—Standard Serial Coding	P
Mrs. Sharon Schatz	FIPS TG-5—Federal Information Processing Vocabulary	
Mr. William J. Welsh	Z39—Library Work, Documentation and Related Publishing Practices	P
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION		
Mr. Charles W. Burlingame	X3T9—I/O Interface Standards	P
Mr. Virgil Byrd	FIPS TG-6—Magnetic Tape, Computer	
Mr. Robert Danek	X3J3—FORTRAN	P
Mr. William B. Dickinson	X3S35—System Performance	P
Mr. William E. Hahn, Jr.	FIPS TG-2—Data Terminals and Data Interchange Systems Requirements	
	X3S34—Data Communications Control Procedures	P
Mr. Kenneth R. Webster	Interagency Committee on ADP	
	FIPS Coordinating and Advisory Committee	
Mr. Donald D. Wilson	X3S35—System Performance	A
Mr. J. Howard Wright	FIPS TG-5—Federal Information Processing Vocabulary	
NATIONAL CAPITOL HOUSING AUTHORITY		
Mr. Donald P. Libera	Interagency Committee on ADP	P
NATIONAL COMMUNICATIONS SYSTEM		
Mr. A. Hotvedt	X3S3—Data Transmission	A
	X3S36—Digital Data Transmission Speeds	P
Mr. William F. Spanke	X3S3—Data Transmission	P
Mr. Warren Spurr	X3S33—Data Communications Formats	A
	X3S34—Data Communication Control Procedures	A
Mr. R. C. Tannenbaum	X3S33—Data Communication Formats	A
	X3S34—Data Communication Control Procedures	P
Mr. George W. White	FIPS TG-2—Data Terminals and Data Interchange Systems Requirements	
	FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques	
	FIPS TG-5—Federal Information Processing Vocabulary	
	FIPS TG-6—Magnetic Tape, Computer	
	FIPS TG-7—Magnetic Tape Labels for Information Interchange	
	X3S3—Data Transmission	A
	X3S33—Data Communications Formats	P
	X3S34—Data Communications Control Procedures	A
	X3S36—Digital Data Transmission Speeds	A
NATIONAL LABOR RELATIONS BOARD		
Mr. Edward Goodstein	Interagency Committee on ADP	P
NATIONAL SCIENCE FOUNDATION		
Mr. E. W. Barrett	Interagency Committee on ADP	P

Participating Member	Committee	Membership Status
Mr. Richard W. Lee	FIPS TG-2—Data Terminals and Data Interchange Systems Requirements FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques	
	OFFICE OF ECONOMIC OPPORTUNITY	
Mr. Gilmore S. Wheeler	Interagency Committee on ADP	P
	OFFICE OF EMERGENCY PREPAREDNESS	
Mr. Stanley Winkler	Interagency Committee on ADP	P
	OFFICE OF BUDGET AND MANAGEMENT	
Miss Anne Marie Lamb	FIPS TG-2—Data Terminals and Data Interchange Systems Requirements	
Mr. Walter A. Magee	FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques	
Mr. Thornton J. Parker III	X3L8—Representations of Data Elements Z39/SC 27—Identification Codes for Countries, Languages, Publishers, Areas and Dates	O O
Mr. Clark R. Renninger	FIPS Coordinating and Advisory Committee X3/SPARC—Standards Planning and Requirements Committee	P
	OFFICE OF TELECOMMUNICATIONS POLICY	
Mr. Arthur R. Cooke	FIPS TG-2—Data Terminals and Data Interchange Systems Requirements	
	OFFICE OF SCIENCE AND TECHNOLOGY	
Col. Andrew Aines	Interagency Committee on ADP Z39—Library Work, Documentation and Related Publishing Practices	P O
	PEACE CORPS	
Mr. Hubert P. Nucci	Interagency Committee on ADP	P
	POST OFFICE DEPARTMENT	
Mr. B. G. Anderson	Interagency Committee on ADP FIPS Coordinating and Advisory Committee	CH
Mrs. Esther B. Campbell	X3L84—Geographic Units	A
Mr. Charles P. Eliot	X3A1—Optical Character Recognition (OCR)	A
Mr. J. E. Finlay	X3L84—Geographic Units	P
Mr. Gregory Vogel	X3A1—Optical Character Recognition (OCR)	P
	RAILROAD RETIREMENT BOARD	
Mr. H. P. Gibbons	Interagency Committee on ADP	P
	SECURITIES AND EXCHANGE COMMISSION	
Mr. Ralph L. Bell	Interagency Committee on ADP	P
	SELECTIVE SERVICE SYSTEM	
Mr. Kenneth H. McGill	Interagency Committee on ADP	P
	SMALL BUSINESS ADMINISTRATION	
Mr. John C. Catale	Interagency Committee on ADP	P

Participating Member	Committee	Membership Status
	SMITHSONIAN INSTITUTION	
Mr. Reginald Creighton	FIPS TG-5—Federal Information Processing Vocabulary	
Mr. Stanley Kovy	Interagency Committee on ADP	P
	TENNESSEE VALLEY AUTHORITY	
Mrs. Marguerite K. Gray	FIPS TG-5—Federal Information Processing Vocabulary	
Mr. Martin O. Hochdorf	Interagency Committee on ADP	P
	UNITED STATES CIVIL SERVICE COMMISSION	
Mr. Victor J. Cavagrotti	Interagency Committee on ADP	CH
Mr. A. R. Demarest	FIPS TG-5—Federal Information Processing Vocabulary	
Mr. Charles J. Kenny	X3L8—Representations of Data Elements	P
	X3L81—Data Standardization Criteria	P
	UNITED STATES INFORMATION AGENCY	
Mr. Clayton P. Balzer	Interagency Committee on ADP	P
	UNITED STATES TARIFF COMMISSION	
Mr. Vincent A. Mariner	Interagency Committee on ADP	P
	VETERANS ADMINISTRATION	
Mr. Harry J. Clarke	Interagency Committee on ADP	P
Mr. Leroy E. Hartswick	FIPS TG-3—Character Subsets, Sign Conventions and Packing Techniques	
Mr. William H. Newbold	FIPS TG-2—Data Terminals and Data Interchange System Requirements	
	FIPS TG-5—Federal Information Processing Vocabulary	
	FIPS TG-6—Magnetic Tape, Computer	

7. Alphabetic Listing of Federal Government Participants on Standards Committees [1]

Federal Participants	Committee	Membership Status [2]
Mr. H. N. Acrivos U.S. Naval Observatory Washington, D.C. 20390 IDS–11–68795 202–696–8795	X3L82	A
Mr. Chester S. Adell ASCS—Room 3131, Auditors Building Department of Agriculture Washington, D.C. 20250 IDS–111–3476 202–388–3476	X3A1	P
Col. Andrew Aines Office of Science and Technology Executive Office Building Washington, D.C. 20506 IDS–103–3547 202–393–3547	IAC/ADP Z39	P O
Mr. David B. Albright, Jr. Director, OADPSMO—Room 4158 Department of Housing and Urban Development Washington, D.C. 20410 IDS–138–55306 202–755–5306	IAC/ADP	P
Mr. Charles L. Allwine National Highway Safety Bureau Department of Transportation Washington, D.C. 20591 IDS–13–25415 202–962–5415	X3L83	A
Mr. B. G. Anderson Office of ADP Management Room 6353 Post Office Department Washington, D.C. 20260 IDS–177–8281 202–961–8281	IAC/ADP	CH
Mrs. Edna Anderson U.S. Marine Corps Hq. AMC, Bldg–7, Rm 107 Systems Design and Programming Code AP 11 Washington, D.C. 20380 IDS–11–50845 202–695–0845	FIPS TG–5	
Lt. Thomas Anderson Rome Air Development Center (EMBIH) Griffis AFB, N.Y. 13440 315–330–2600	X3A11	P
Mrs. Henriette D. Avram Information Systems Office Library of Congress Washington, D.C. 20540 IDS–182–6068 202–426–6068	Z39/SC 2 ISO/TC 46/WG 4	CH P

[1] Names of the Federal Government Participants listed have been submitted by Federal Departments and Agencies. Future changes in membership or membership information should be forwarded to the Office of Information Processing Standards Center for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234 through Agency Points of Contact (See Section 5.1.4 for FIPS Contact).

[2] P—Principal Member; O—Observer; A—Alternate Member; L—Liaison; CH—Chairman.

Federal Participant	Committee	Membership Status
Miss Mildred Bailey Office of the Assistant Secretary of Defense (Comptroller) Directorate for Data Standardization Policy Room 3A 918, Pentagon Washington, D.C. 20301 IDS-11-78632 202-697-8632	X3L8 X3L81 X3L83 X3L86	A A A P
Mr. George Baird Office of Information Systems Planning and Development (NPLD) Navy Department Washington, D.C. 20350 IDS-11-54750 202-695-4570	X3J4 X3J42 X3J44	A A P
Mr. Clayton P. Balzer U.S. Information Agency Systems and Planning Staff Washington, D.C. 20547 IDS-101-26603 202-632-6603	IAC/ADP	P
Mr. E. W. Barrett Office of Data Management Systems National Science Foundation 1800 G Street, NW Washington, D.C. 20550 IDS-101-25990 202-632-5990	IAC/ADP	P
Mr. Alan R. Barnum Chief, Computer Sciences Information Processing Branch Rome Air Development Center Griffis AFB, N.Y. 13440 315-330-2600	X3/SPARC/OSCL	P
Mr. Ralph L. Bell Securities and Exchange Commission Office of Data Processing - Room 257 500 North Capitol Street Washington, D.C. 20549 IDS-138-51152 202-755-1152	IAC/ADP	P
Mr. Lloyd M. Berstein Systems Analysis Division (RD-630) Federal Aviation Administration Department of Transportation Washington, D.C. 20590 IDS-13-27156 202-962-7156	X4-A9	P
Mr. Joseph E. Bishop HQ AFDSDC (DIBA) Forrestal Building 1000 Independence Avenue Washington, D.C. 20330 IDS-11-35734 202-693-5734	X3J4	P
Mr. Norman Booth OADMS/GSA Seventh and D Streets, SW Washington, D.C. 20407 IDS-13-24567 202-963-4567	FIPS TG-5	

Federal Participant	Committee	Membership Status
Mr. Rodney Brown Office of the Secretary, ASR Department of the Interior Room 7112 Washington, D.C. 20240 IDS–183–2543 202–343–2543	IAC/ADP FIPS TG–3	P
Mr. Henry F. Burkhard Communications/ADP Lab (AMSEL–NL–A–2) U.S. Army Electronics Command Ft. Monmouth, N. J. 07703 201–535–1241	X3A1 X3A11	A A
Mr. A. J. Burkhart Director, Mag Surfaces Lab, GSA National Bureau of Standards Washington, D.C. 20234 IDS–164–3697 301–921–3697	FIPS TG–6 X3B1 ISO/TC 97/SC 4/WG 1 ISO/TC 97/SC 4/WG 5	CH P P
Mr. Charles W. Burlingame NASA HQ TN Washington, D.C. 20546 IDS–13–20774 202–962–0774	X3T9	P
Mr. Virgil Byrd NASA, Goddard SFC - Drop 534 Greenbelt, Md. 20771 IDS–134–5080 301–982–5080	FIPS TG–6	
Mr. Stephen Caine Naval Electronic Systems Command (OOT–1) Washington, D.C. 20360 IDS–11–28963 202–692–8963	FIPS TG–6	
Mrs. Esther B. Campbell Reports and Records Management Division Post Office Department Washington, D.C. 20260 IDS–177–7162 202–961–7162	X3L84	A
Mr. Lloyd W. Campbell ARDC–CSD Aberdeen Proving Grounds, Md. 21005 301–234–3350, Ext. 3492	X3J3	A
Mr. James T. Cape Assistant Executive Manager P.O. Box 62, DTIE Oak Ridge, Tenn. 37830 615–483–4352	Z39/SC 27	P
Mr. John C. Catale Office of Data Management Small Business Administration 1441 L Street, NW - Room 118 Washington, D.C. 20416 IDS–128–3321 202–382–3321	IAC/ADP	P
Mr. Victor J. Cavagrotti, Director Bureau of Manpower Information Systems U.S. Civil Service Commission 1900 E Street, NW - Room 6425 Washington, D.C. 20415 IDS–101–26814 202–632–6814	IAC/ADP FIPSCAC	P

Federal Participant	Committee	Membership Status
Mr. C. C. Chandler Plans Directorate (DCA 330) Defense Communications Agency Washington, D.C. 20305 IDS–11–42273 202–694–2273	X3L2	A
Dr. Donald E. Church Chief, Transportation Division Bureau of the Census Washington, D.C. 20233 IDS–157–296 202–440–1296	X3L84	P
Mr. George E. Clark Room B264 - TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3545 301–921–3545	FIPSCAC TG–2 X3/SSC X3S3 X3S33 X3S34	CH P P P P
Mr. Harry J. Clarke Director, Research Service (36) Veterans Administration Washington, D.C. 20420 IDS–148–3151 202–389–3151	IAC/ADP	P
Mr. Hugh Conrad GSA/FSS/SMS Washington. D.C. 20406 IDS–16–77850 703–557–7850	X4	P
Mr. Arthur R. Cooke Office of Telecommunications Policy Washington, D.C. 20504 IDS–103–5186 202–395–5186	FIPS TG–2	
Mr. Logan O. Cowgill Water Resources Scientific Information Center Department of the Interior Washington, D.C. 20240 IDS–183–1100 202–343–1100	Z39	A
Mr. Robert G. Cox OS—OMS—HEW Third and C Streets, SW - Rm. 4300 Washington, D.C. 20201 IDS–13–24245 202–962–4245	FIPS TG–3 X3L8	P
Mr. Allen Craig Civil Aeronautics Board Bureau of Accounts and Statistics 1825 Connecticut Avenue, NW Washington, D.C. 20009 IDS–128–7661 202–382–7661	IAC/ ADP	P
Mr. Reginald Creighton, Manager Information Storage and Retrieval Projects Information Systems Division Smithsonian Institution Washington, D.C. 20560 IDS–144–5992 202–381–5992	FIPS TG–5	

Federal Participant	Committee	Membership Status
Mr. John P. Croke Office of Finance, Room G–6 General Services Administration 19th and F Streets, NW Washington, D.C. 20405 IDS–183–4141 202–343–4131	X3L84	A
Mr. Harold J. Crowley Rome Air Development Center (EMCA) Griffis AFB, N.Y. 13440 315–330–2600	X3S3 X3S36	P CH
Mr. Fred Croxton Library of Congress Washington, D.C. 20540 IDS–182–5123 202–426–5123	Z39/SC 20	CH
Mr. Robert Cunningham, Jr. U.S. Coast Guard Department of Transportation Washington, D.C. 20591	X4–A11	P
Mr. Norman B. Cyr Office of Information Systems Planning and Development (RM & SD) Navy Department Washington, D.C. 20350 IDS–11–79722 202–697–9722	FIPS TG–5	
Mr. David M. Dale Agency for International Development 1875 Connecticut Avenue, NW State Annex 12, Room 725 Washington, D.C. 20523 IDS–101–20126 202–632–0126	IAC/ADP	P
Mr. Robert Danek NASA - Code 543–1 Goddard Space Flight Center Greenbelt, Md. 20771 IDS–134–6796 301–982–6796	X3J3	P
Mr. Roger D. Daniero GSA - Standardization Division Building 4 - Room 420A - Crystal Mall Washington, D.C. 20406 IDS–16–77811 202–557–7811	FIPS TG–6 X3B7	A
Mr. Richard Day, Tl National Security Agency Ft. Meade, Md. 20755 ATTN: Tl IDS–188–7500 301–388–7500	FIPS TG–2	
Mrs. Dorothy K. DeCost U.S. Army Computer Systems Support & Evaluation Command ATTN: USACSSEC–SO Washington, D.C. 20310 IDS–11–53244 202–695–3244	X3L8 X3L81	A A
Mr. John A. Delaney Federal Trade Commission Office of Administration Washington, D.C. 20580 IDS–1262–85 202–393–6800, Ext. 85	IAC/ADP	P

Federal Participant	Committee	Membership Status
Mr. A. R. Demarest Bureau of Manpower Information Systems U.S. Civil Service Commission Room 6H29 1900 E Street, NW Washington, D.C. 20415 IDS–101–25610 202–632–5610	FIPS TG–5	
Mr. J. L. DeProspero Spec. Asst. to the Deputy Asst. Commissioner ADP Resources, Procurement and Development Automatic Data Management Services FSS–GSA - Crystal Mall Building 4, Room 1112B Washington, D.C. 20406 IDS–16–78655 703–557–8655	X3B7	A
Mr. Arthur T. Devlin OMI - Room 347–E, Admin Building Department of Agriculture Washington, D.C. 20250 IDS–111–6275 202–388–6275	IAC/ADP	P
Mr. Frank P. DiBlasi, Jr. Operations Department of State Washington, D.C. 20520 IDS–101–23331 202–737–3331	IAC/ADP	P
Mr. W. F. Dietericks GSA - Standardization Division Federal Supply Service, Room 507 Washington, D.C. 20406 IDS–16–77895 202–557–7895	X3B2 X3B3	P P
Mr. Walter A. Dickerson ASCS Room 5710, South Building Department of Agriculture Washington, D.C. 20250 IDS–111–6118 202–388–6118	X3A1 X4–A9	P P
Mr. William B. Dickinson NASA - Code 841 Goddard Space Flight Center Greenbelt, Md. 20771 IDS–134–6984 301–982–6984	X3S35	P
Mr. George W. Dodson, Jr. GSA - Federal Supply Service Crystal Mall - Building 4 - Room 1112 Washington, D.C. 20406 IDS–16–78655 202–557–8655	IAC/ADP FIPSCAC X3/IPSSB	P P
Mr. Sol Dolleck Chief, Systems Division Bureau of the Census Suitland, Md. 20233 IDS–157–265 301–440–1265	X3L8	O
Mr. G. Stanley Doore ESSA - Weather Bureau (W151) 8060 Thirteenth Street Silver Spring, Md. 20910 IDS–179–2359 301–495–2359	FIPS TG–2 FIPS TG–3	

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Federal Participant	Committee	Membership Status
Mr. William Douglas, C9 National Security Agency Ft. Meade, Md. 20755 ATTN: C9 IDS–188–7570 301–688–7570	FIPS TG–2	
Mr. Vincent Dovydaitis, Jr. Rome Air Development Center Griffis AFB, N.Y. 13440 315–330–2600	X3S35	P
Mr. J. Patrick Dugan Treasurer - Controller Export-Import Bank of the U.S. 811 Vermont Avenue, NW Washington, D.C. 20571 IDS–128–22118 202–382–2118	IAC/ADP	P
Dr. Blanton C. Duncan Room B154 - CHEM National Bureau of Standards Washington, D.C. 20234 IDS–164–2779 301–921–2779	X3/SPARC/TEXT X3L2	CH A
Mr. Jules B. DuPeza Office of the Secretary Information Systems Division (TAD–25) Department of Transportation 400 - 7th Street, SW - Room 10313 Washington, D.C. 20591 IDS–118–64721 202–426–4721	IAC/ADP FIPS TG–5	P
Mr. Andrew E. Dziekan Office of Automated Data Mgt. Services General Services Administration Regional Office Building 7th and D Streets, SW Washington, D.C. 20407 IDS–13–24567 202–963–4567	FIPS TG–5	
Mr. C. L. Eadie ADP Standards Division GSA–FSS Crystal Mall, Building 4 - Room 216 Washington, D.C. 20406 IDS–16–70977 202–557–0977	X3L8 X3L81	P P
Mr. L. E. Eady, Director Administrative Management Federal Mediation and Conciliation Service Department of Labor Building, Room 1218 Washington, D.C. 20427 IDS–110–3507 202–393–3507	IAC/ADP	P
Mr. Robert F. Early USN Underwater Sound Laboratory Fort Trumbull New London, Conn. 06320 203–442–0711, Ext. 2108	X3K6	P
Mr. John H. Eastman GSA Magnetic Surfaces Lab Building 225 - Room B11 National Bureau of Standards Washington, D.C. 20234 IDS–164–3697 301–921–3697	FIPS TG–6 X3B1 X3B7	O P

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Federal Participant	Committee	Membership Status
Mr. David Eaton Office of Information Systems Planning and Development (NPLD) Navy Department Washington, D.C. 20350 IDS–11–54750 202–695–4750	X3J3	A
Mr. Charles P. Eliot Bureau of Research and Engineering Post Office Department 521 - 12th Street, NW - Room 304 Washington, D.C. 20260 IDS–177–7875 202–961–7875	X3A1	A
Mr. James O. Emerson Central Intelligence Agency Room 4E24 Washington, D.C. 20505 IDS–143–5618 202–351–5618	FIPS TG–5	
Lt. Roger Engelback Space and Missile Systems Office (SMTGS) Los Angeles AFS, Calif. 90401	X3/SPARC/JOVL	A
Mr. Art Ernst Room A207 - TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3494 301–921–3494	FIPS TG–6	
Mr. Herman E. Fey Social Security Administration 6401 Security Boulevard Room 2–B–2, Operations Baltimore, Md. 21235 IDS–130–4687 301–944–5000, Ext. 4687	FIPS TG–3 FIPS TG–7	
Mr. J. E. Finlay Reports and Records Mgt. Division Post Office Department 12th and Pennsylvania Ave, NW - Room 2319 Washington, D.C. 20260 IDS–177–8410 202–961–8410	X3L84	P
Mr. Julius Fiori GSA—Standardization Division Crystal Mall Building 4 - Room 420 A Washington, D.C. 20406 IDS–16–77811 202–557–7811	FIPS TG–6	
Mr. Calvin Fleming, C7 National Security Agency Ft. Meade, Md. 20755 ATTN: C7 IDS–188–7627 301–688–7627	FIPS TG–3	
Mr. H. R. Fletcher Bureau of the Census Washington, D.C. 20233 IDS–157–7228 301–440–7228	X3J4 X3J41	P CH
Miss Clara Fox P.O. Box 62, DTIE Oak Ridge, Tenn. 37830 615–483–4352	Z39/SC 3	P

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Federal Participant	Committee	Membership Status
Mr. Richard Fredette Office of Information Systems Planning and Development (NPLD) Navy Department Washington, D.C. 20350 IDS–11–70725 202–697–0725	X3J4 X3J42 X3J43	A P CH
Mr. Robert R. Freeman ESSA - Weather Bureau 415 - WSC 5 11800 Old Georgetown Road Rockville, Md. 20850 IDS–14–68486 202–656–8486	Z39/SC 9	P
Mr. David C. Friedman Room A205 - TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3494 301–921–3494	X3A1 X3A12 X4–A9 X4–A11	P P P P
Mr. George Gallagher Social Security Administration Room 1–R–25 Operations Baltimore, Md. 21235 IDS–130–6344 301–944–5000, Ext. 6344	X3L83	P
Mr. H. P. Gibbons Railroad Retirement Board 844 Rush Street Chicago, Ill. 60611 312–944–5500, Ext. 291	IAC/ADP	P
Mr. James W. Gillespie Chief of Naval Operations (Code 916) Department of the Navy Washington, D.C. 20350 IDS–11–71261 202–967–1261	X3L8 X3L81 X3L82	A A CH
Mr. James T. Givens DIAMS–6B Defense Intelligence Agency Washington, D.C. 20301 IDS–11–25125 202–692–5125	X3L82	A
Mr. Edward Goodstein National Labor Relations Board 1717 Pennsylvania Avenue, NW Washington, D.C. 20570 IDS–128–5265 202–393–5265	IAC/ADP	P
Mr. James W. Gray, Director Departmental Data Processing Center US Department of Labor Office of the Assistant Secretary for Administration 400 First Street, NW - Room 301 Washington, D.C. 20212 IDS–187–4371 202–961–4371	IAC/ADP	P
Mrs. Marguerite K. Gray Tennessee Valley Authority 201 Old Post Office Building Chattanooga, Tenn. 37401 615–755–2968	FIPS TG–5	

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Federal Participant	Committee	Membership Status
Mr. Jack W. Grewell Federal Aviation Administration 800 Independence Avenue, SW Washington. D.C. 20590 IDS–13–27191 202–962–7191	Z39/SC 24	CH
Mr. James G. Griffis Defense Communications Engineering Office (H940) Washington, D.C. 20301 IDS–11–44496 202–694–4496	X3S33 X3S34 X3T9	A P A
Mr. Robert P. Griffith Oklahoma City Air Material Area (MCMEME) Tinker AFB, Okla. 73145 405–732–2949	X3J7	A
Dr. H. R. J. Grosch Center for Computer Sciences and Technology National Bureau of Standards Washington, D.C. 20234 IDS–164–3525 301–921–3525	X3/IPSSB	P
Mr. Kay D. Guiles Information Systems Office Library of Congress Washington, D.C. 20540 IDS–182–5123 202–426–5123	Z39/SC 2	P
Mr. Gerald Gustafson Naval Electronics Systems Command Washington, D.C. 20360 IDS–11–62114 202–696–2114	FIPS TG–6	
Mr. William E. Hahn, Jr. NASA - Code 841 Greenbelt, Md. 20771 IDS–134–4062 301–982–4062	FIPS TG–2 X3S34	P
Mr. Norbert Halloran, Act. Chief Division of Procedural Studies and Statistics Admin. Office of the U.S. Courts Supreme Court Building Washington, D.C. 20544 IDS–1207–381 202–393–1640, Ext. 381	IAC/ADP	P
Mr. John Halterman Bureau of the Census Washington, D.C. 20233 IDS–157–7478 202–735–7478	FIPS TG–7	
Mr. J. N. Hand, Chief Data Processing Division Federal Communications Commission 1919 M Street, NW Washington, D.C. 20554 IDS–101–27115 202–632–7115	IAC/ADP	P
Mr. H. A. Harback Standardization Division GSA–FSS Crystal Mall Building 4 - Room 507 Washington, D.C. 20406 IDS–16–77895 202–557–7895	X3B1	P

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Federal Participant	Committee	Membership Status
Mr. Frank R. Hargy Office of Finance, Room G–6 General Services Administration 19th and F Streets, NW Washington, D.C. 20405 IDS–183–4141 202–343–4141	X3L84	P
Mr. Hal Harriman Department of Transportation Office of Facilitation Washington, D.C. 20590 IDS–118–64317 202–426–4317	X4–A11	P
Dr. Joseph O. Harrison, Jr. Office of Information Processing Standards Room B264 - TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3551 301–921–3551	FIPSCAC X3/IPSSB X3 X4	CH A P P
Mr. Robert J. Hartel, Chief Section of Systems Development Interstate Commerce Commission 12th and Constitution Avenue, NW Room B–411 Washington, D.C. 20423 IDS–156–481 202–737–9765, Ext. 481	IAC/ADP	P
Mr. Leroy E. Hartswick Research Service (361) Veterans Administration 810 Vermont Avenue Washington, D.C. 20420 IDS–148–3738 202–389–3738	FIPS TG–3	
Mr. Robert Hegland NAVCOSSACT (Code 02D) Washington Navy Yard Washington, D.C. 20390 IDS–11–33930 202–693–3930	X3/SPARC/DOCN	P
Mrs. Madeline Henderson Room B364 - TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–2381 301–921–2381	Z39	P
Major Samuel P. Herod HQ SAC (DOCODS) Offutt AFB, Nebr. 68113 402–294–5238	X3/SPARC/JOVL	P
Mr. Henry A. Herz Office of the Assistant Secretary of Defense (Comptroller) Directorate for Data Standardization Policy Room 3A 918, The Pentagon Washington, D.C. 20301 IDS–11–78636 202–697–8636	X3L82 X3L84	P A
Mr. Martin Hochdorf, Chief Computer Center Tennessee Valley Authority 116 Old Post Office Building Chattanooga, Tenn. 37401 615–755–2968	IAC/ADP	P

Federal Participant	Committee	Membership Status
Mrs. Frances E. Holberton Room B264 - TECH National Bureau of Standards Washington, D.C. 20234 IDS-164-3551 301-921-3551	FIPSCAC FIPS TG-7 X3/SPARC/DOCN X3J3 X3K1	CH P P P
Mr. Stanley Homa (AMSEL-NL-E2) U.S. Army Electronics Command Ft. Monmouth, N.J. 07703 201-535-1944	X3A1 X3A11	P P
Mr. Arthur Hopkins USGS Computer Center Division 1541 Interior Building Washington, D.C. 20240 IDS-183-38222 202-343-8222	FIPS TG-2	
Mr. George Hopping, Director Data Engineering Division Office of Communications, TCS GSA, Room 4030 19th and F Streets, NW Washington, D.C. 20405 IDS-183-6013 202-343-6013	FIPS TG-2 X3S3 X3S34	P A
Mr. A. Hotvedt National Communications System ATTN: Compatibility Office Washington, D.C. 20305 IDS-11-44534 202-694-4534	X3S3 X3S36	A P
Mr. William Huf Naval Communications Command (N75) 4401 Massachusetts Avenue, NW Washington, D.C. 20390 IDS-11-60685 202-696-0685	FIPS TG-2 X3L2 X4-A9	A P P
Mr. Raymond A. Jensen Water Resources Scientific Information Center Department of the Interior Washington, D.C. 20240	Z39	P
Mr. Philip S. Johnson Room B264 - TECH National Bureau of Standards Washington, D.C. 20234 IDS-164-3547 301-921-3547	FIPSCAC FIPS TG-6 X3/SSC X3B1 X3B7	CH P P CH
Mr. Robert L. Johnson ADP Planning Officer OMO - US Department of Commerce Room 5327, Main Commerce Washington, D.C. 20230 IDS-189-3201 202-696-3201	IAC/ADP	P
Mr. Richard E. Kear, Chief Computer Systems Branch Office of the Comptroller Federal Power Commission GAO Building, Room 4743 Washington, D.C. 20426 IDS-129-3260 202-386-3260	IAC/ADP	P

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Federal Participant	Committee	Membership Status
Mr. Victor G. Kehler HQ USAF (DAPX) Advanced Systems Planning Team DAS Washington, D.C. 20330 IDS–11–29259 202–692–9259	X4	P
Mr. Philip B. Kennedy HQ CIA IPS Room 6E25 Washington, D.C. 20505 IDS–143–6194 202–351–6194	IAC/ADP	P
Mr. Charles J. Kenny Director, FPMIS Design Staff Bureau of Manpower Information Systems US Civil Service Commission - Room 6H29 Washington, D.C. 20415 IDS–101–25610 202–632–5610	X3L8 X3L81	P P
Mr. Michael Keplinger Room B250 - TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3414 301–921–3414	Z39/SC 2	P
Mr. Robert Klassen Special Library Specialist Library Planning Development Branch Office of Education - HEW Sixth and D Streets, SW Washington, D.C. 20202	Z39	P
Mr. Stanley Kovy Acting Director Information Systems Division Smithsonian Institution Washington, D.C. 20560 IDS–144–5417 202–381–5417	IAC/ADP	P
Mr. Mitchell A. Krasny 1308 Sills Clearinghouse for Scientific and Technical Information 5285 Port Royal Road Springfield, Va. 22171	Z39	A
Major Richard Kuhr Plans Division (DCA 317.1) Defense Communications Agency Washington, D.C. 20305 IDS–11–43439 202–694–3439	X3S3	A
Mr. Daniel A. Lahn Office of Management Systems Department of Health, Education and Welfare Washington, D.C. 20201 IDS–13–24245 202–963–4245	FIPS TG–5	
Mr. E. W. Lahr Naval Electronic Systems Command 5805 Leesburg Pike Baileys Crossroads, Va. 22041 IDS–11–34791 202–693–4791	X3T9	A

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Federal Participant	Committee	Membership Status
Miss Anne Marie Lamb Room 9235, NEOB Office of Management and Budget Washington, D.C. 20503 IDS–103–4727 202–395–4727	FIPS TG–2	O
Mr. Robert J. Lambird PE Systems Division, Room 3061 Bureau of the Census Washington, D.C. 20233 IDS–157–7317 301–440–7317	X3/SSC X3K6 X3K6–Ad Hoc/Computer System Simulation	P P CH
Miss Patricia Langendorf Rome Air Development Center (EMIRD) Griffis AFB, N.Y. 13440 315–330–2621	X3J1 X3K5 X3K53	P A P
Mr. Abraham Lebowitz National Agricultural Library Department of Agriculture Washington, D.C. 20250	Z39/SC 2	P
Mr. Richard W. Lee National Science Foundation Washington, D.C. 20550 IDS–101–25990 202–343–5990	FIPS TG–2 FIPS TG–3	
Mr. Donald P. Libera Director of Administration National Capitol Housing Authority 1729 New York Avenue, NW - Room 311 Washington, D.C. 20430 IDS–128–28023 202–382–8023	IAC/ADP	P
Mr. John L. Little Room B264 - TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3545 301–921–3545	FIPSCAC FIPS TG–3 X3/SPARC/OSCL X3L2 X3L21	CH P P CH
Mr. Lawrence Livingston National Library of Medicine Bethesda, Md. 20014	Z39/SC 20	P
Dr. Ben S. Loeb Assistant Director Programming Coordination Atomic Energy Commission - P–714 Washington, D.C. 20545 IDS–119–7765 301–973–7765	Z39/SC 24	P
Mr. Charles C. Lowe Chief, Data Processing Branch Government Printing Office Washington, D.C. 20401 IDS–149–612 202–541–3612	IAC/ADP	P
Col. W. F. Luebbert Instruction Support Activity U.S. Military Academy West Point, N.Y. 10996 914–938–3800, Ext. 4744	X3L2	A
Mr. B. V. Magee (AMSEL–NL–E2) U.S. Army Electronics Command Ft. Monmouth, N.J. 07703 201–535–1944	X3B2	P

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Federal Participant	Committee	Membership Status
Mr. Walter A. Magee Room 9235, NEOB Office of Management and Budget Washington, D.C. 20405 IDS–103–3741 202–395–3741	FIPS TG–3 X3L21	O
Mr. Edward J. Mahoney Deputy Director for ADP General Accounting Office—OPSS Room 6106, GAO Building Washington, D.C. 20548 IDS–129–3911 202–386–3911	IAC/ADP	P
Mr. Paul Mantek Room B206—TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3494 301–921–3494	FIPS TG–6 X3B1	A
Mr. Vincent A. Mariner Technical Service United States Tariff Commission 7th and E Streets, NW Washington, D.C. 20436 IDS–1272–172 202–628–2172	IAC/ADP	P
Mr. John Mayer Social Security Administration Room 1–R–25, OPS Baltimore, Md. 21235 IDS–130–6346 301–944–5000, Ext. 6346	X3L83	A
Mr. Robert L. Mayer Plans, Training and Standards Branch Atomic Energy Commission—F–017 Washington, D.C. 20545 IDS–119–3191 301–973–3191	FIPS TG–5 X3L8 X3L81	A A
Mr. Harry S. Mayhew Administrative Officer Bureau of Data Processing & Accounts Room 3–A–25 Social Security Administration Baltimore, Md. 21235 IDS–130–5981 301–944–5000, Ext. 5981	X3A1	P
Mr. Henry McDonough, C7 National Security Agency Ft. Meade, Md. 20755 ATTN: C7 IDS–188–7043 301–688–7043	FIPS TG–3	
Mr. Inman McElvy, R7 National Security Agency Ft. Meade, Md. 20755 ATTN: R7 IDS–188–7502 301–688–7502	FIPS TG–6	
Mrs. Hazel E. McEwen Room B264—TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3551 301–921–3551	X3L8 X3L81 X3L84	A A P

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Federal Participant	Committee	Membership Status
Mr. Kenneth H. McGill Selective Service System 1724 F Street, NW Washington, D.C. 20435 IDS–183–5989 202–343–5989	IAC/ADP	P
Mr. Wharton A. McGreer Automation Policy Office, Secretary of Defense (Comptroller) Room 3A 918, Pentagon Washington, D.C. 20301 IDS–11–79708 202–697–9708	X3/IPSSB X3	A A
Mr. Terry McIntyre Office of the Geographer (INR/RSF/GE) Department of State—Room 8744 NS Washington, D.C. 20520 IDS–101–22022 202–737–2022	X3L84	P
Mr. Albert N. McMahan HQ USAF (AF ACDB) Washington, D.C. 20330 IDS–11–76505 202–697–6505	FIPS TG–2 X3J4	A
Mr. Robert L. Mills Systems Division Bureau of the Census Suitland, Md. 20233 IDS–157–7214 301–735–7214	FIPS TG–2 FIPS TG–3	
Mr. Ray T. Moore Division 456.01 National Bureau of Standards Washington, D.C. 20234 IDS–164–3427 301–921–3427	FIPS TG–2 X3S35	P
Mr. William D. Morgan Office, Chief of Staff Army CSAVCS–MM Washington, D.C. 20310 IDS–11–50292 202–695–0292	X3K3	CH
Mr. Charles P. Morley Department of Labor Room 839–C, Vanguard Building 1111 - 20th Street, NW Washington, D.C. 20036 IDS–110–4166 202–961–4166	X3L8	P
Mr. Kenneth Morris Office of the Secretary Department of Health, Education and Welfare Washington, D.C. 20201 IDS–13–21778 202–962–1778	IAC/ADP	P
Mr. Joseph D. Naughton Computer Center National Institutes of Health Building 2, Room 224 Washington, D.C. 20014 IDS–14–65381 301–496–5381	FIPS TG–2 FIPS TG–3	

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Mr. William H. Newbold Research Service (361) Veterans Administration 810 Vermont Avenue, NW Washington, D.C. 20420 IDS–148–3739 202–389–3739	FIPS TG–2 FIPS TG–5 FIPS TG–6	
Mr. Hubert P. Nucci Director of Data Systems Peace Corps Washington, D.C. 20525 IDS–128–6740 202–393–6740	IAC/ADP	P
Mr. J. T. O'Neill Room B264—TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3551 301–921–3551	FIPSCAC X3/SPARC/PERF	P
Mr. J. Pape Rome Air Development Center (EMCA) Griffis AFB, N.Y. 13440 315–330–7086	X3S35	A
Mrs. Elizabeth Parker Room B264—TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3551 301–921–3551	X3J3	O
Miss Patricia E. Parker Information Systems Office Library of Congress Washington, D.C. 20540 IDS–182–5123 202–426–5123	Z39/SC 27	CH
Mr. Thornton J. Parker, III ADP Management Branch Room 9235—NEOB Office of Management and Budget Washington, D.C. 20503 IDS–103–4727 202–395–4727	X3L8 Z39/SC 27	O O
Mr. Bobbie J. Parkinson Oklahoma City Air Materiel Area (OCCSC) Tinker AFB, Okla. 73145 405–732–2949	X3J7	P
Mr. Oliver W. Parson Naval Audit Service P.O. Box 131 Falls Church, Va. 22046 IDS–11–20318 202–692–0318	X3/SPARC/DOCN	A
Mr. Herbert L. Peress Library of Congress Washington, D.C. 20540 IDS–182–5117 202–426–5117	FIPS TG–7	

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Federal Participant	Committee	Membership Status
Mr. David Peters GSA–FSS Standardization Division Room 317 Washington, D.C. 20406 IDS–16–77857 703–557–7857	X4–A9	P
Dr. A. W. Pratt Computer Research & Technology National Institutes of Health Building 12A, Room 1015 Washington, D.C. 20014 IDS–14–65703 301–496–5703	FIPS TG–5	
Mrs. Sorine A. Preli Statistical Audit and Analysis Div. Federal Mediation and Conciliation Service Room 1133, Main Labor Washington, D.C. 20427 IDS–110–3542 202–393–3542	X3K1	P
Mr. Sherwood Prescott U.S. Marine Corps (Code AP 11) Quarters K, Building T–2 Washington, D.C. 20380 IDS–11–43525 202–694–3525	FIPS TG–5 FIPS TG–7	
Mr. Bernard Radack Systems Development Officer Internal Revenue Service 1111 Constitution Avenue, NW Washington, D.C. 20224 IDS–184–4119 202–404–4119	X3/SSC X3L8 X3L83 X4–A11	P P P P
Mr. Roy Rapp Bureau of Data Processing & Accounts Room 3–J–19—OPS Social Security Administration Baltimore, Md. 21235 IDS–130–2872 301–944–5000, Ext. 2872	X3A1	A
Mrs. Lucia J. Rather Information Systems Office Library of Congress Washington, D.C. 20540 IDS–182–5124 202–426–5124	X3/SPARC/TEXT X3L2	P P
Mr. Robert A. Raup Director for Automation Policy Office, Secretary of Defense (Comptroller) Room 3A 918 Pentagon Washington, D.C. 20301 IDS–11–56104 202–695–6104	IAC/ADP FIPSCAC X3/IPPSB X3	P P P P
Mr. Paul C. Redmer Assistant to the Governor for Systems Management Farm Credit Administration USDA Building, Room 5917 Washington, D.C. 20578 IDS–111–2785 202–388–2785	IAC/ADP	P

Federal Participant	Committee	Membership Status
Mr. Paul R. Reimers, Coordinator Information Systems Office Library of Congress Washington, D.C. 20540 IDS–182–5114 202–426–5114	IAC/ADP Z39/SC 20	P P
Mr. Clark Renninger Office of Management and Budget Room 9235, NEOB Washington, D.C. 20503 IDS–103–4960 202–395–4960	FIPSCAC X3/SPARC	P
Mr. William J. Retzback Digital Switched Engineering Br. (H920) Defense Communications Engineering Off. Washington, D.C. 20301 IDS–11–43044 202–694–3044	X3S33	P
Mr. Jay E. Rice ADP Standards Division GSA–FSS Crystal Mall Building 4 Washington, D.C. 20406 IDS–16–71613 202–557–1613	X3	A
Mr. Robert D. Rice Office of the Chief of Naval Operations Naval Records Management Branch Washington, D.C. 20390 IDS–11–64279 202–696–4279	FIPS TG–7	A
Mr. James N. Ridgell HQ USAF (AFADAB) Hoffman Building, Room 716 2561 Eisenhower Drive Alexandria, Va. 22316 IDS–152–0229 202–274–0229	X3/SPARC/DOCN	CH
Mr. William B. Robertson Office of the Assistant Secretary of Defense (Comptroller) Directorate for Data Standardization Room 3A 918, Pentagon Washington, D.C. 20301 IDS–11–78630 202–697–8630	X3L8 X3L81 X3L82 X3L84 X3L86	P P A P A
Mr. Paul M. Robinson, Jr. Information Systems Division (0911H) Office, Chief of Naval Operations Washington, D.C. 20350 IDS–11–70523 202–697–0523	X3T9	P
Mr. Gerald Rosenkrantz Data Archives Staff Consultant National Archives Building, Room 102 Washington, D.C. 20408 IDS–13–21932 202–963–1932	FIPS TG–7	
Mr. Robert E. Rountree Room B264—TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3551 301–921–3551	X3J4 X3J44 X3L2	A A L

Federal Participant	Committee	Membership Status
Mr. Hubert E. Sauter Director Clearinghouse for Federal Scientific and Technical Information U.S. Department of Commerce Springfield, Va. 22171 IDS–9–321–8572 703–206–8572	Z39	P
Mrs. Sharon Schatz Information Systems Office Library of Congress Washington, D.C. 20540 IDS–182–5123 202–426–5123	FIPS TG–5	
Mr. Nicholas Schauer Office of Budget and Finance Department of the Treasury—Room 4219 15th and Pennsylvania Avenue, NW Washington, D.C. 20220 IDS–184–5751 202–964–5751	IAC/ADP	P
Mr. Walter Schuler National Division of Vital Statistics Parklawn Building 5600 Fishers Lane Rockville, Md. 20852 IDS–153–1820 301–443–1250	X3L83	P
Mr. M. Herbert Schwartz Office of the Controller Atomic Energy Commission Room D–202 Washington, D.C. 20545 IDS–119–3685 301–973–3685	FIPSCAC	
Mr. Thomas M. Shimabukuro Plans Directorate (DCA 330) Defense Communications Agency Washington, D.C. 20305 IDS–11–42273 202–694–2273	FIPS TG–2 X3S3	 A
Mr. C. Roger Shoch NAVCOSSACT (Code 02D) Washington, D.C. 20390 IDS–11–33930 202–693–3930	X3/SSC X3/SPARC/PERF X3K3	P P P
Mr. Delbert Shoemaker ADP Standards Division General Services Administration Federal Supply Service OADMS Washington, D.C. 20406 IDS–16–70977 202–557–0977	IPSSB FIPS TG–2 X3 X3B1 X3B7 X3K3 X3L5 X3L8 X3L81 X3S3 X3T9	A P O O P O A A L P
Mr. Richard G. Shook, Chief Plans, Training and Standards Branch Atomic Energy Commission—F–017 Washington, D.C. 20545 IDS–119–3191 301–973–3191	IAC/ADP X3L8 X3L81	P P P

Federal Participant	Committee	Membership Status
Mr. Philip D. Shupe Room A204—TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3494 301–921–3494	X3B7 X4–A8	P P
Mr. Larry Shute Office of Management Support Administrative Division Department of Justice Washington, D.C. 20004 IDS–187–3274 202–737–8200, Ext. 3274	IAC/ADP	P
Mr. Gerald C. Schutz, Chief Systems Division (TST–80) Office of the Secretary Department of Transportation 400—7th Street, SW—Room 2110 Washington, D.C. 20591 IDS–118–64241 202–426–4241	FIPS TG–2 X3S3 X3S35	P P
Mr. P. D. Simpson GSA—TCS 18th and F Streets, NW Washington, D.C. 20405 IDS–183–6013 202–343–6013	FIPS TG–2 X3S3 X3S34	A P
Mr. Jerold E. Slocum DDP Board of Governors Federal Reserve System Room 1210 Washington, D.C. 20551 IDS–147–595 202–737–1100, Ext. 595	IAC/ADP	P
Mr. Edward L. Snider Office of Information Systems Planning and Development (OISPD) Office of the Secretary of the Navy Room 5E 773, Pentagon Washington, D.C. 20301 IDS–11–76744 202–697–6744	FIPS TG–2	
Mr. Peter D. Soppas Dept. of Health, Education & Welfare Third and Independence Avenue, SW Washington, D.C. 20201 IDS–13–24005 202–367–4005	FIPSCAC	
Mr. Al Sorkowitz NAVCOSSACT (Code 02D) Washington Navy Yard Washington, D.C. 20390 IDS–11–33530 202–693–3530	X3/SPARC/JOVL	CH
Mr. William F. Spanke National Communications System ATTN: Compatibility Office Washington, D.C. 20305 IDS–11–44534 202–694–4534	X3.3	P
Mr. W. Speary NIH Computer Center Building 12, Room 2224 Washington, D.C. 20014 IDS–14–65181 301–496–5181	FIPS TG–2	

Federal Participant	Committee	Membership Status
Mr. Langston A. Spell National Highway Safety Bureau 400 Seventh Street, SW Washington, D.C. 20591 IDS–13–61447 202–426–1447	X3L83	P
Mr. Warren Spurr National Communications System ATTN: Compatibility Office Washington, D.C. 20305 IDS–11–44534 202–694–4534	X3S33 X3S34	A A
Mr. John Staklo Office of the Assistant Secretary of Defense (Comptroller) Directorate for Data Standardization Policy Room 3A 918, The Pentagon Washington, D.C. 20301 IDS–11–78632 202–697–8632	X3L83	P
Mr. B. H. Steacy Special Assistant for Systems Development Naval Investigative Service Hoffman Building 2461 Eisenhower Drive Alexandria, Va. 22314 IDS–152–40726 202–274–0726	X3L83	A
Mr. Walter Stender Deputy Archivist for Federal Records Center National Archives Building, Room 14–N Washington, D.C. 20208 IDS–13–35183 202–963–5183	X3L83	P
Miss Mary K. Stevens Room B364—TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–2381 301–921–2381	FIPS TG–5	
Miss Corrine C. Stockwell GSA–FSS–FXC Crystal Mall Building 4—Room 236A Washington, D.C. 20406 IDS–16–71858 202–557–1858	X3L86	P
Major Oliver C. Stokes, Jr. Plans Directorate (DCA 330) Defense Communications Agency Washington, D.C. 20305 IDS–11–42273 202–694–2273	X3A1 X3A11	A A
Mr. John L. Strain U.S. Army Computer Systems Support and Evaluation Command ATTN: USACSSEC–E Washington, D.C. 20310 IDS–11–74035 202–697–4035	X3J1	A
Mr. R. Strausberg NAVCOSSACT (Code 23) Washington Navy Yard Washington, D.C. 20390 IDS–11–34234 202–693–4234	X3K2	P

Federal Participant	Committee	Membership Status
Mr. Stephen Stromick Rome Air Development Center (EMBIH) Griffis AFB, N.Y. 13440 315-330-2600	X3A11	P
Mr. Nicholas J. Suszynski, Jr. Asst. Director, Division of Research Federal Deposit Insurance Corporation Washington, D.C. 20429 IDS-1236-402 202-389-4402	IAC/ADP	P
Mr. Frank J. Tagler NAVCOSSACT (Code 02D) Washington Navy Yard Washington, D.C. 20390 IDS-11-33930 202-693-3930	X3L84	A
Mr. R. C. Tannenbaum National Communications System ATTN: Compatibility Office Washington, D.C. 20305 IDS-11-44534 202-694-4534	X3S33 X3S34	A P
Mr. Volney Taylor Room 4319, Treasury Building Washington, D.C. 20220 IDS-184-5751 202-964-5751	FIPS TG-3	
Mr. Helmut T. Thiess NAVCOSSACT (Code 02) Washington Navy Yard Washington, D.C. 20390 IDS-11-33596 202-693-3596	X3/IAC X3K5 X3K52 X3K53 ISO/TC 97/SC 1 ISO/TC 97/SC 1/WG 1	P P CH A P P
Mr. George C. Thomas Defense Communications Engineering Office (H940) Washington, D.C. 20301 IDS-11-44496 202-694-4496	X3T9	A
Mr. Edmund Trione GSA-FSS Standardization Division Room 317 Washington, D.C. 20406 IDS-16-77857 703-557-7857	X4-A9	A
Mr. Harley Unger Off. of Systems Requirements, Plans and Information (TPI-10) Office of the Secretary Department of Transportation 800 Independence Avenue, SW Washington, D.C. 20591 IDS-13-28613 202-962-8613	X3L84	P
Miss Mabel V. Vickers Room B264—TECH National Bureau of Standards Washington, D.C. 20234 IDS-164-3551 301-921-3551	X3J4 X3J44	P P

Federal Participant	Committee	Membership Status
Mr. Gregory Vogel Bureau of Research and Engineering Post Office Department—Room 304 Washington, D.C. 20260 IDS–177–7875 202–961–7875	X3A1	P
Mr. J. D. Waggoner USACSSEC ATTN: USACSSEC–SO Washington, D.C. 20310 IDS–11–79564 202–697–9564	X3J3	P
Mr. Henry D. Walker USGS—Branch of Field Survey Department of the Interior 1340 Old Chain Bridge Road—Room 306 McLean, Va. 22101 IDS–183–5543 202–343–5543	X3L84	P
Miss Josephine L. Walkowicz Room B250—TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3517 301–921–3517	FIPSCAC FIPS TG–5 X3K5 X3K52 ISO/TC 97/SC 1	CH P P P
Mr. Daniel A. Walton Asst. Management Officer—ADP District of Columbia 401 Third Street, NW Washington, D.C. 20001 IDS–137–3282 202–628–3282	IAC/ADP	P
Col. Joseph B. Warren Office of the Assistant Secretary of Defense Deputy Comptroller for Data Automation Room 3A 882, Pentagon Washington, D.C. 20301 IDS–11–53147 202–695–3147	FIPSCAC	P
Mr. L. S. Waters Washington Data Processing Center Statistical Reporting Service Department of Agriculture Washington, D.C. 20250 IDS–111–4385 202–388–4385	FIPS TG–6	
Mr. Richard S. Watt Federal Reserve Board Data Processing Division Washington, D.C. 20551 IDS–147–617 202–737–1100, Ext. 617	X3/SPARC/DOCN	P
Mr. Kenneth R. Webster ADP Management Branch NASA HQ. Code TN Washington, D.C. 20546 IDS–13–20774 202–963–0774	IAC/ADP FIPSCAC	P
Lt. William C. Webster Office, Special Assistant to the Secretary of the Navy Room 5E 873. Pentagon Washington, D.C. 20350 IDS–11–76744 202–697–6744	X3/SPARC/JOVL	A

Federal Participant	Committee	Membership Status
Mr. M. H. Weik, Jr. Army Research Office 3045 Columbia Pike Arlington, Va. 22202 IDS–11–43511 202–694–3511	FIPS TG–5 X3K5	A CH
Mr. Sidney Weinstein GSA—FSS—OADMS Crystal Mall Building 4 Washington, D.C. 20406 IDS–16–78655 703–557–8655	FIPSCAC	
Mr. Bruce F. Wellborn General Services Administration Federal Supply Service Seventh and D Streets, SW—Room 6662 Washington, D.C. 20407 IDS–13–33427 202–963–3427	FIPS TG–3	
Mr. William J. Welsh Associate Director Processing Department Library of Congress Washington, D.C. 20504	Z39	P
Mr. Gilmore S. Wheeler Acting Director, Information Center Office of Planning, Research & Evaluation Office of Economic Opportunity 1111—18th Street, NW Washington, D.C. 20506 IDS–128–28063 202–382–8063	IAC/ADP	P
Mr. George W. White National Communications System Room 4650 Eighth and South Courthouse Road Arlington, Va. 22204 IDS–11–44534 202–694–4534	FIPS TG–2 FIPS TG–3 FIPS TG–5 FIPS TG–6 FIPS TG–7 X3S3 X3S33 X3S34 X3S36	 A P A A
Mr. Harry S. White, Jr. Office of Information Processing Standards Room B264—TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3551 301–921–3551	FIPSCAC X3 X3/IAC X3/SPARC X3/SPARC/FDII X3L8 X3L81 X3L82 ISO/TC 97/WG K	A P P CH CH P P CH
Mr. Robert E. White DIAMS–6B Defense Intelligence Agency Washington, D.C. 20301 IDS–11–25577 202–692–5577	X3/SPARC/JOVL	A
Mr. Donald D. Wilson Code 841 Goddard Space Flight Center Greenbelt, Md. 20771 IDS–134–6677 301–982–6677	X3S35	A

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Participating Member	Committee	Membership Status
Dr. G. M. R. Winkler U.S. Naval Observatory Washington, D.C. 20390 IDS–11–68421 202–696–8421	X3L82	A
Mr. Stanley Winkler, Chief Resource Evaluation Division Office of Emergency Preparedness Room 415, EOBA Washington, D.C. 20504 IDS–103–5150 202–395–5150	IAC/ADP	P
Mr. Thomas P. Wood Computer Systems Analyst Federal Home Loan Bank Board Washington, D.C. 20552 IDS–129–6347 202–386–6347	IAC/ADP	P
Mr. Roy W. Worral Room A247—TECH National Bureau of Standards Washington, D.C. 20234 IDS–164–3494 301–921–3494	X3A1 X3A12	A A
Mr. Wayne Worrell Topographic Command 58500 Corps of Engineers Washington, D.C. 20315 301–986–2813	X3/SPARC/DOCN X3K3	A A
Mr. J. Howard Wright NASA—Code 502 Goddard Space Flight Center Greenbelt, Md. 20771 IDS–134–4685 301–982–4685	FIPS TG–5	
Mr. George Zookolis Digital Switched Engineering Br. (H920) Defense Communications Engineering Off. Washington, D.C. 20301 IDS–11–43044 202–694–3044	X3S34	A

8. Listing of State Information Systems Coordinators

The National Bureau of Standards, in promulgating Federal Information Processing Standards, has established contacts with the 50 States through the National Association for State Information Systems (NASIS). Copies of proposed and approved Federal Standards are provided to the State Coordinators of the NASIS for comment on their applicability within State and local governments.

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